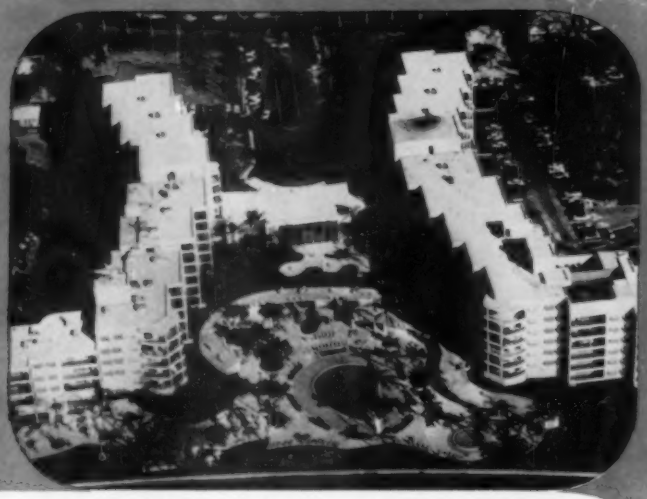
SEPTEMBER 1957

CONCRETE

For producers of precast and prestressed concrete products and ready mixed concrete

REPORTING THE
WORLD
CONFERENCE
ON Prestressed
Concrete



Palm Beach Towers Hotel, Palm Beach, Fla.; Arch.—John Hans Graham & Assocs., Washington, D. C.; Struc. Engr.—Obeler & Clarke, Miami; Consltg. Engr.—Norman C. Schmid & Assocs. Palm Beach; G. C.—Taylor Construction Co., Miami; Pozzolith Ready-Mixed concrete—Burnup & Sims, and Rinker Materials, West Palm Beach.

Thunderbird Motel, Miami Beach, Fla.; Archt.—Norman Giller & Assocs., Miami Beach; Contr.— Taylor Construction Co., Miami; Engr. —Jules Channing, Miami; Pozzolith Ready-Mixed concrete—Maule Industries, Inc. & Acme Concrete Corp.

Better Concrete Behavior . . . with POZZOLITH

Special concrete requirements for these four ultra-modern Florida hotels varied widely. They included: easy placeability with the least amount of water . . . accelerated strength for early form removal . . . minimum shrinkage . . . retarded rate of hardening for minimum cracking.

These special concrete properties, as well as improvement in overall quality, were obtained by employing Pozzolith—key to lowest water content, control of entrained air and control of rate of hardening.

More than 150,000,000 cubic yards of concrete for all types of structures have been produced with Pozzolith since 1932, to increase user's control of concrete behavior and to obtain desired properties *most advantageously.*

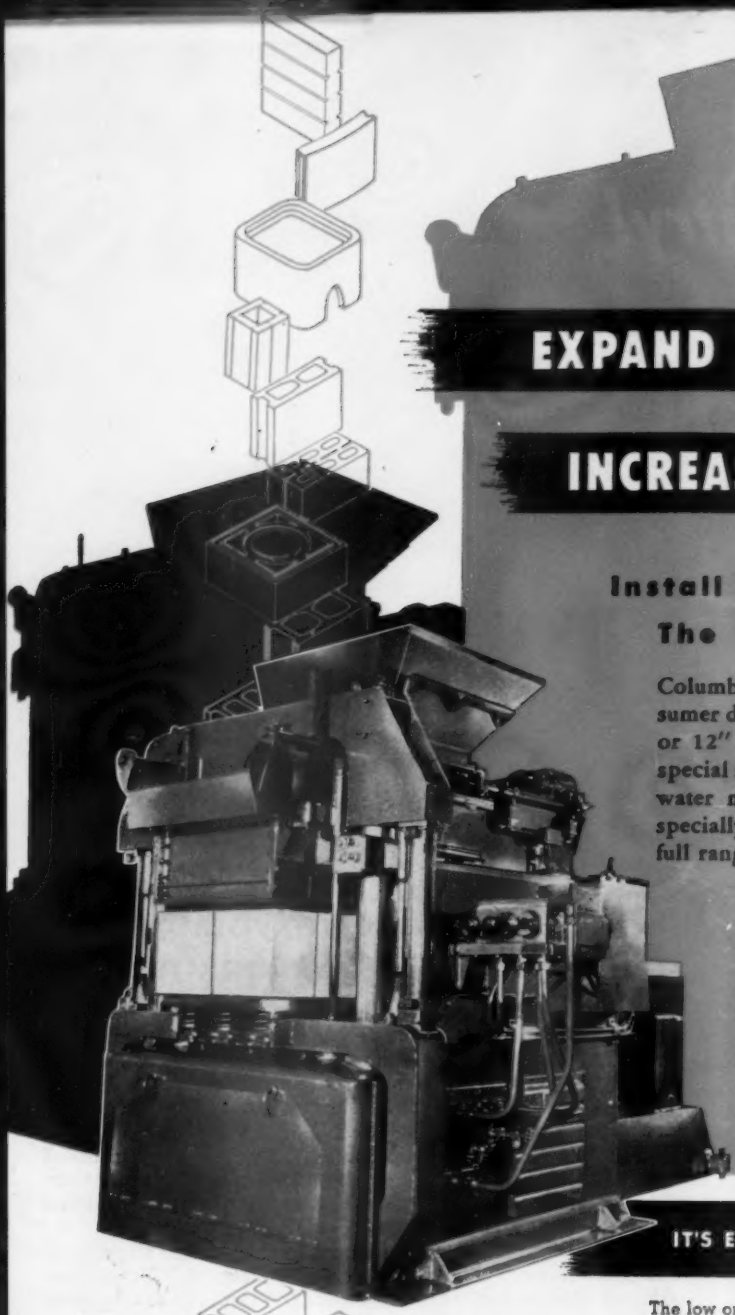
Call in any one of our more than 100 full-time fieldmen to discuss and demonstrate the benefits of Pozzolith controls for *your* project.

Americana Hotel, Bal Harbor, Miami Beach, Fla.; Archt.—Morris Lapidus, Miami Beach; Engr.—Obeler & Clarke, Miami Beach; G. C. —Taylor Construction Co., Miami; Pozzolith Ready-Mixed concrete —Maule Industries, Inc.

Eden Roc Hotel, Miami Beach, Fla.; Archt.—Morris Lapidus, Miami Beach; Engr.—H. J. Ross Assocs., Miami; G. C.—Taylor Construction Co., Miami; Pozzolith Ready-Mixed concrete—Maule Industries, Inc.

THE MASTER BUILDERS CO.
DIVISION OF AMERICAN-MARIETTA CO.

General Offices: Cleveland 3, Ohio • Toronto 9, Ontario • *Export:* New York 17, N. Y.
Branch Offices In All Principal Cities • *Cable: Mastmethod, N. Y.*



EXPAND YOUR MARKET

INCREASE YOUR PROFITS!

Install a *Columbia* 12"-HIGH The "ONE-MACHINE" Block Plant!

Columbia's exclusive 12"-High meets every consumer demand for concrete building units 4", 8" or 12" including an endless variety of popular special shapes 12" high . . . drain tile, silo staves, water meter boxes, Roman and Norman tile, specially designed face block and others . . . a full range of concrete masonry products!

The Columbia Block machine . . . hydraulically activated, electronically controlled, completely automatic . . . operates at 4 to 6 cycles per minute using standard plain pallets.

Make the most profit . . . by making the most of your market . . . with versatile Columbia 12"-High!

IT'S EASY TO OWN A *Columbia* 12"-HIGH

Among the concrete block machines on the market today, Columbia's 12"-High gives the highest production per dollar of capital invested . . . and, per square foot of plant space occupied!

The low original price represents an easily amortized capital investment.

FLEXIBLE "PAY AS YOU DEPRECIATE" TERMS make you the owner of this profitable piece of concrete manufacturing equipment on an easy-to-pay basis.

It you are planning a plant expansion, a new plant, or would like to add concrete block production to your present business, call us and we will have a qualified man in your plant within 24 hours. No obligation. Phone OXford 4-1501. Columbia provides everything you need for complete plant outfitting: three models of block machines: rollaways; offbearers; cubing return; pallet returns and oilers; racks; pallets; turntables; block splitters; bins; cement silos; skip hoists; batch mixers; hydraulic pumping units.

There is a Columbia representative in your area . . . for information call, write or wire

Columbia MACHINE

HOME OFFICE: 107 S. GRAND, VANCOUVER, WASHINGTON
FACTORY BRANCH AND WAREHOUSE: MATTOON, ILLINOIS
PARTS DEPOT AND OFFICE: BURBANK, CALIFORNIA

MANUFACTURERS AND WORLD WIDE DISTRIBUTORS OF A COMPLETE LINE OF PLANT EQUIPMENT FOR PRODUCTION OF CONCRETE PRODUCTS

Another LEADER in the Block Industry!

Harry J. Sceviour, President and James E. Campbell, Secretary-Treasurer of Day & Campbell, Ltd.

★ This is the 141st of a series of ads featuring leaders in the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

...progressive young men make successful blockmakers

There's money in the block business. James Campbell and Harry Sceviour . . . operating under the name Day & Campbell, Ltd., Hamilton, Ontario . . . are proving it with good results. Through good management and planned advertising, these two young progressive Canadians have become unusually successful blockmakers.

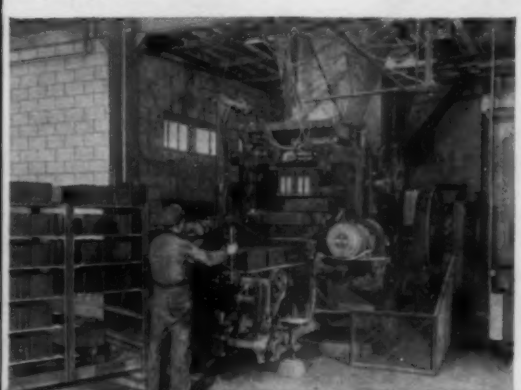
The firm started operations in 1947. In 1954, they installed their first Besser Vibrapac, thereby stepping up the production of high quality block. Last year, for example, they produced and sold 2,800,000 units (8" or equivalent).

The Vibrapac is one of the heroes in this success story. Jim Campbell states: *"The versatility of the Besser Vibrapac enables us to manufacture and promote economical use of special units, such as bull nose, etc., to give our masonry jobs built-in beauty."*

You too can become a successful blockmaker. And you'll find it easier with Besser Vibrapacs. Write today for literature.

Day & Campbell trucks at the entrance of their Hamilton, Ontario block plant.

Besser 50 cu. ft. Batch Mixer, worthy companion to the Vibrapac, at the Day & Campbell plant.



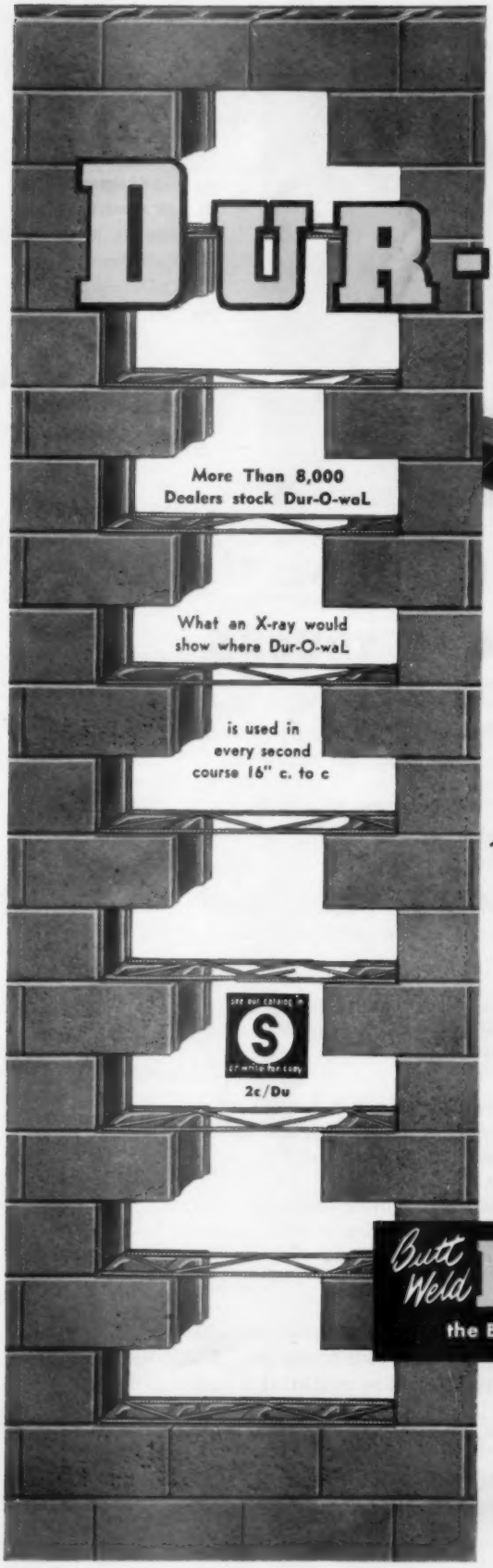
Besser Vibrapac, front pallet feed model. Installed in Day & Campbell plant. Fully automatic. No machine operator required. Off-bearer is removing green block with the help of a Besser Power Hoist.

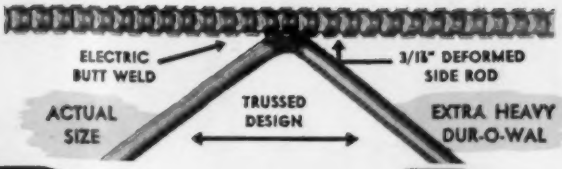
Holy Trinity Church at Hamilton, Ontario. Note exposed Vibrapac Block walls. All units supplied by Day & Campbell, Ltd.

BESSER company

Dept. 127, Alpena, Mich., U. S. A. *First in Concrete Block Machines*

A7-141





DUR-O-WAL®

RIGID MASONRY WALL REINFORCEMENT

Mechanical bond every 8 inches of wall . . . Two mortar locks at each weld . . . Electric butt welds place all rods on a single plane; make possible uniform mortar joints . . . Trussed design causes side rods to work together . . . Conforms to ASTM std. A-82-34 for high tensile steel . . . 6-inch lap at splices develops continuity and maintains reinforcing strength . . . Deformed side rods for maximum bond strength.

10-foot lengths . . . 500 lineal feet per bundle

SELECTION TABLE

Wall Thickness	4 in.	6 in.	8 in.	10 in.	12 in.	13 in.
Extra Heavy Dur-O-wal	4-EH	6-EH	8-EH	10-EH	12-EH	13-EH
Wt. per 1000 lin. ft.	247 lb.	250 lb.	257 lb.	266 lb.	276 lb.	282 lb.
Standard Dur-O-wal	4-S	6-S	8-S	10-S	12-S	13-S
Wt. per 1000 lin. ft.	178 lb.	180 lb.	187 lb.	196 lb.	207 lb.	212 lb.

Furnished in either bright basic or galvanized steel. Specify Drip Section Dur-O-wal for Cavity Walls.

NOTE — In determining whether to specify Standard weight or Extra Heavy weight Dur-O-wal, comparisons in following table should be properly evaluated:

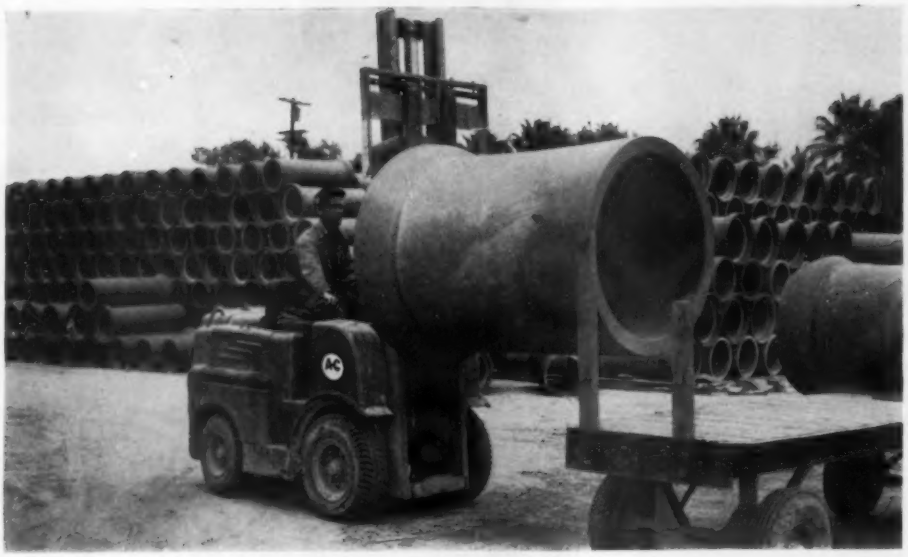
	Weight lbs. tensile steel per lin. ft	Surface bond area—sq. in. per lin. ft.	Number of mortar locks per lin. ft.
Standard weight Dur-O-wal	0.19	11.18	3
Extra Heavy Dur-O-wal	0.26	14.14	3

Butt Weld DUR-O-WAL® with RIGID TRUSSED Design
the Backbone of Steel for EVERY masonry wall

Phone, wire or write Dept. 3-P for additional information about Dur-O-wal

Dur-O-wal Div., Cedar Rapids Block Co., **CEDAR RAPIDS, IA.** Dur-O-wal Prod., Inc., Box 628, **SYRACUSE, N.Y.** Dur-O-wal of Ill., 119 N. River St., **AURORA, ILL.** Dur-O-wal Products of Ala., Inc., Box 5446, **BIRMINGHAM, ALA.** Dur-O-wal Prod., Inc., 4500 E. Lombard St., **BALTIMORE, MD.** Dur-O-wal Div., Frontier Mfg. Co., Box 49, **PHOENIX, ARIZ.** Dur-O-wal, Inc., 165 Utah St., **TOLEDO, OHIO**

Power Hoist. A7-141



The operator likes the way this Allis-Chalmers 6,000-lb lift truck maneuvers, even in close quarters. It is one of five Allis-Chalmers lift trucks at a California concrete pipe plant.

Operators like them best...drive them best

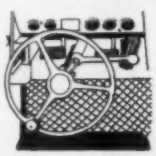
ALLIS-CHALMERS FORK TRUCKS

"Feels like a car with power steering," says Arthur B. Wiley, fork truck driver at a Michigan factory. Further, an Allis-Chalmers truck "works fine in narrow aisles. It has no controls on the floor — easy to get on and off of."

Center-point steering gives the same easy responsiveness as a moving auto. Full 18-in. steering wheel completes the familiar "feel."

"Must have been engineered for the driver," says operator Gast at a Wisconsin foundry. "Shifting is handy and I like where the controls are located. Have plenty of room for driving."

Controls are right at the operator's finger tips. Gauges are in plain sight. Floor is clear, seat can be moved ahead or back to suit the operator.



"I just like the whole machine — everything about it," sums up John Cromer, operator at a Missouri plant. "It's a work horse. It handles and operates smoother and performs better than others we have had in the plant."

Outstanding performance starts with the Allis-Chalmers industrial heavy-duty engine. It provides extremely high torque in relation to rated capacity for smooth operation, climbing grades, moving heavy loads.

Put Yourself in the Driver's Seat tells more about why operators "like them best . . . drive them best." Send for your free copy of this interesting booklet — and see your Allis-Chalmers material handling dealer.

ALLIS-CHALMERS, MATERIAL HANDLING DEPT., BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

BH-52E

September 1957 CONCRETE

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FEATURES FOR THIS MONTH

Reporting the World Conference on Prestressed Concrete 28

Session I, which included the welcoming and opening remarks to the 1,270 visitors, set the general tone—one of controlled optimism—of the conference proceedings.

Visitors Listen to Engineers 32

Session II, similar to a number of the session that followed it, was devoted to talks by men of research. General subject was "Materials and Techniques."

Prestressed Concrete Bridges 35

Problems connected with constructing bridges of prestressed concrete and the future of this material in bridge construction were the main topics of discussion during Session III.

Manufacturing and Marketing 37

A review of some of the main points of interest brought up during the two manufacturers' luncheons.

Prestressed Buildings in Europe and the U.S. 38

Attention of the visitors, during Session IV, centered on types of prestressed units going into the present-day building.

Vistors Tour Projects and 2 Nearby Plants 40

On Wednesday's outing, 21 buses were needed to carry the visitors on the plant and project tour. Still other groups made the rounds in private automobiles.

1,000-Foot Bridge Spans 42

Foreign delegates discuss present problems: earthquake construction, future plans for ½-mile-high towers, and long prestressed spans.

Prestressed Concrete Used at Sea 44

Program speakers covered subjects such as "Prestressed Pavements, Wharves, Piles, and Dams."

Centers Attention on Research Projects 46

Five university research projects were presented during the ninth session. Among them was a study of the effects of calcium chloride.

"Now!" says Lin at Closing Session 48

Besides emphasizing the present and what's possible with prestressing now, Mr. Lin, in closing the session, looked to the future and said, "You ain't seen nothing, yet."

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DONALD T. PAPINEAU, Publisher

NBP

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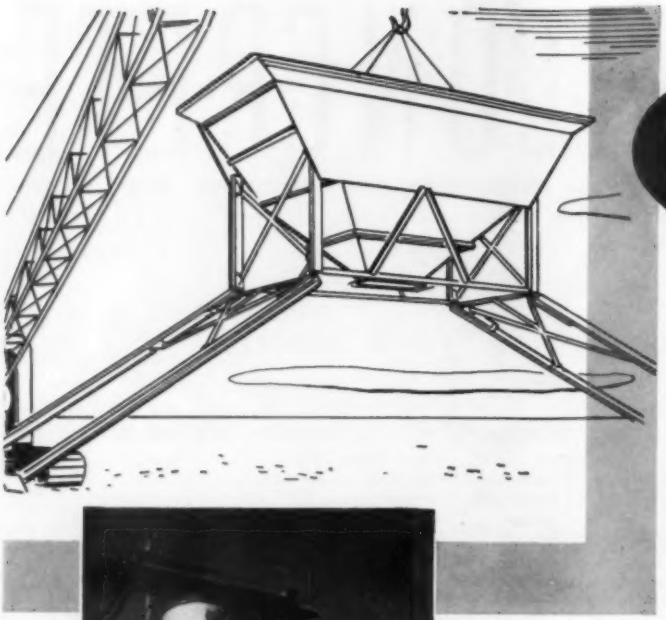
VAC



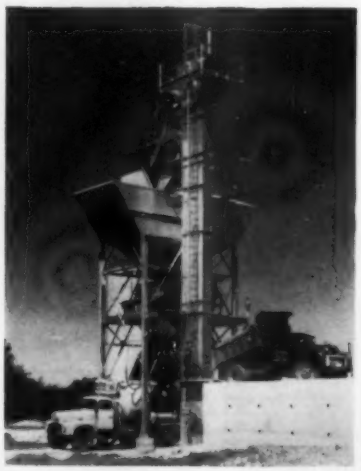
BUTLER

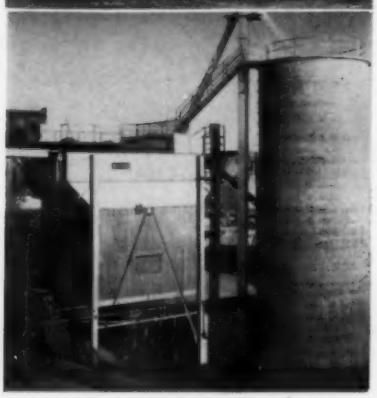
"Today's Most Portable, Practical High Production Ready Mix Plants"

SAVE SET-UP TIME ON EVERY BUILDING PROJECT

Result of years of pioneering in all phases of portability in high-production concrete plants, Butler "Pack-up-'n-Go" Ready Mix plants cut valuable *hours*, even *days*, every time you move to a new building location. Cement bins, aggregate bins, elevator units, batchers — all units are designed and built for swift set-up, fast knockdown, and easy moving. Dismantling and erection is a matter of hours instead of days!

Butler cement and aggregate bins have hinged columns which swing into place ready for easy bolting when the bin is raised. Each batcher is a self-contained package, and is attached as an integral unit complete with its own supporting legs, wiring and handy plug-in connections. Even elevators have high portability. Shipped as a single piece, in two sections, or with chains and buckets attached, they can be lifted and secured into position in minutes instead of hours.





For true practical portability — for automatic or manual operation — for ready-mix plants of every capacity — for experienced ahead-of-the-times engineering — Call your BUTLER Distributor or write direct.

BUTLER BIN CO. 9911 BLACKSTONE AVE. WAUKESHA, WISCONSIN

The new 1958 REX ADJUSTA-WATE MOTO-MIXER®

One look shows it. Here's a truck mixer design so far ahead, it leaves all others far behind!

NEW *Chuting System*... Larger 5-foot spout is deeper-dished for handling more concrete faster. Straight-back chute lock permits chute to be locked in straight-back position when maneuvering on and around job-site.

NEW *Blading*... Fast shrink blade imparts a severe criss-cross mixing action to materials for faster, more thorough mixing. All REX blades are *heat-treated* for twice the life... half the maintenance.

NEW *Simplified Controls*... The clutch, gear shift, brake and automatic throttle are controlled by *one lever*... easy-to-read-and-operate controls are grouped together, increasing driver efficiency by saving waste motion.

NEW *Pressure Water System* ... Eliminates pump maintenance, no moving parts. Top-mounted or side-mounted interchangeable flush tanks. Completely safe!

Call, wire or write your local Rex Distributor or CHAIN Belt Company for all the reasons why Rex is "RIGHT for Ready-Mix Service!"

The "CLEAN" Look...

The clean, good looks of these *new* REX models prove their modern functional design. No corners, angles or channels to collect concrete, cement, sand or dirt. You save time and money on cleanup... keep new-machine appearance lasting longer!

CONSTRUCTION REX MACHINERY

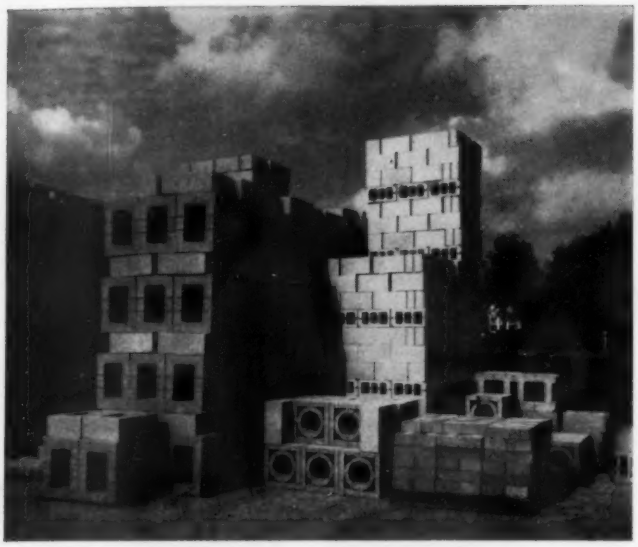
ADJUSTA-WATE MOTO-MIXERS

LEADERSHIP... THROUGH CREATIVE ENGINEERING

CHAIN BELT COMPANY / 4665 W. Greenfield Ave., Milwaukee 1, Wis.

You're wrong, Mark Twain, with your "Everybody talks about the weather, but..."

Concrete producers DO something about low temperatures when they treat with COLUMBIA CALCIUM CHLORIDE



THEY MAKE CONCRETE PRODUCTS SET FASTER

And make more profit on them. Mark that, Mark Twain. That's because they get days-shorter curing on pre-cast units, blocks, pipe. Columbia Calcium Chloride *actually* works most noticeably when temperatures *drop*. Pre-steam holding time, steaming and soaking periods can all be safely reduced. There's less cracking during early handling, and ultimate strengths test higher, too. Producers save on inventory costs, yet make earlier deliveries. Are you specifying Columbia Calcium Chloride in your various mixes?

THEY MAKE READY MIX THAT SETS FASTER

No need to mention what this means to contractor-customer job costs. Strength specs can be met days sooner, forms pulled for other jobs, finishers moved in and off without profit-killing overtime. Columbia Calcium Chloride gives both initial and final set a full *three times faster!* Contractors sleep a lot better these cool fall nights . . . wake up to give the next order to the supplier who adds protective, job-bettering Columbia Calcium Chloride to ready mix. Have *you* been getting their business? Columbia Calcium Chloride could clinch your sale.

WRITE TODAY FOR COMPLETE INFORMATION . . . PLEASE MENTION WHETHER INTERESTED IN CONCRETE PRODUCTS OR READY MIX

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER · PITTSBURGH 22 PENNSYLVANIA

DISTRICT OFFICES: Cincinnati • Charlotte • Chicago
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Minneapolis • New Orleans • Dallas • Houston
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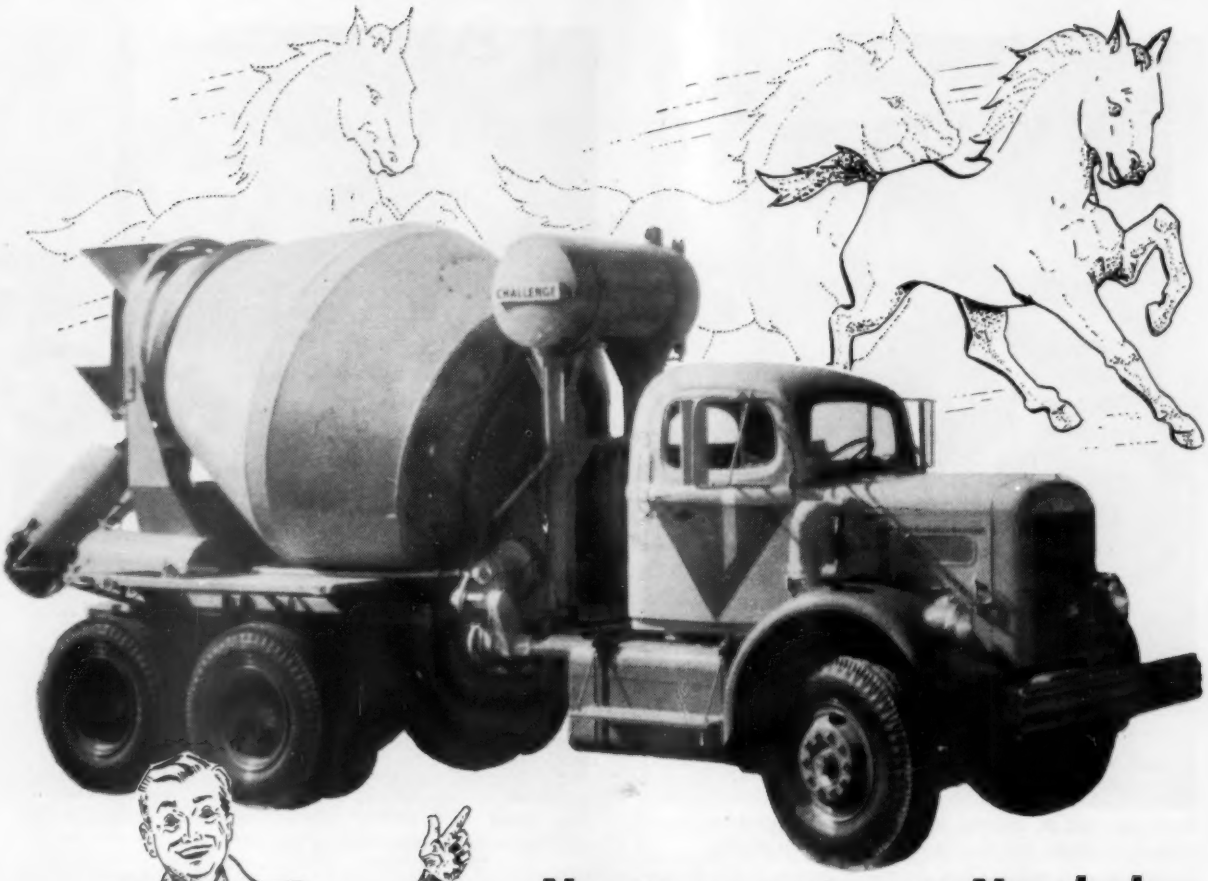
IN CANADA: Standard Chemical Limited and its Commercial Chemicals Division



No "Extra Horses" Needed With The CHALLENGE "ETO"

YOU CAN'T TELL THE MIXER IS USING TRUCK ENGINE HORSEPOWER

The Challenge "ETO" seldom takes more horsepower than your truck air compressor . . . no more horsepower than power steering.

DEPENDABLE, EFFICIENT POWER SOURCE

A mixer engine is an orphan . . . frequently the driver is not aware of the condition of the mixer engine until it stops. On the other hand, the driver knows exactly, the condition of his truck engine. He can "feel" every little cough the truck engine makes. As a result, the truck and mixer always give top performance when out on the job.

THE "ETO" MAKES A LOT OF SENSE DOLLAR-WISE TOO

It uses LESS fuel . . . requires LESS maintenance
. . . needs NO special parts inventory.

The Challenge "ETO" Will Do ANY Job . . . BETTER, And At MORE PROFIT

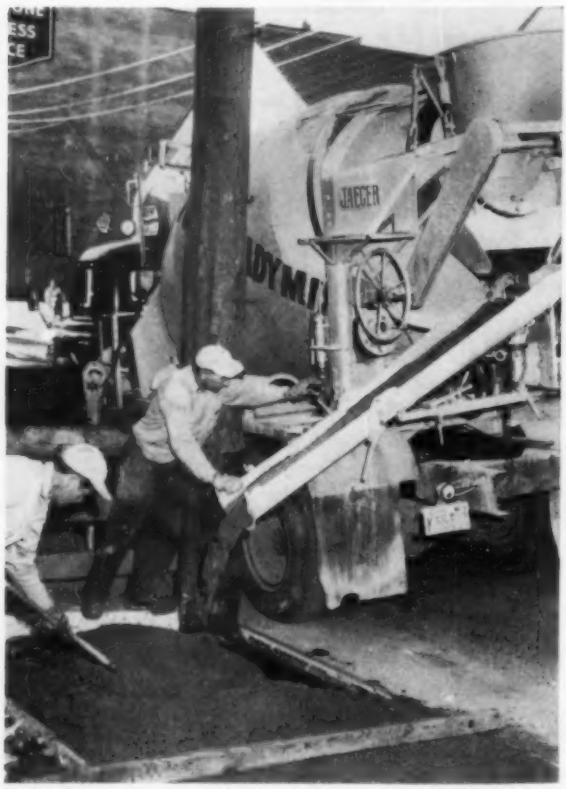
COOK BROS. EQUIPMENT CO.

Exclusive World-Wide Distributor For Challenge Pacemaker Truck Mixers

3334 San Fernando Road, Los Angeles 65 • CLinton 6-3151

Fast-charging at 16 rpm, with Jaeger's 3-speed transmission, is common practice in efficient modern plants.

Any speed down to 1½ rpm for controlled discharge of stiff concrete without stalling engine.



Rear drum control and fixed pivot point of chute head permit easy handling in tight quarters.

You can also get Jaeger advantages in horizontal-drum truck mixers. For details, ask for Specification CTM7.

Flip-over chute extension saves time and work; permits pouring over more area without moving mixer.

Only Jaeger offers your choice of open end loader, sealed end loader or top-loading sealed drum, as wanted.

You, too, can increase payload with the Jaeger Model "F"

In engineering the Model "F", Jaeger has taken long steps to help you achieve the maximum payload possible with your trucks and drivers —

by lightening mixer weight,

by speeding mixer operation,

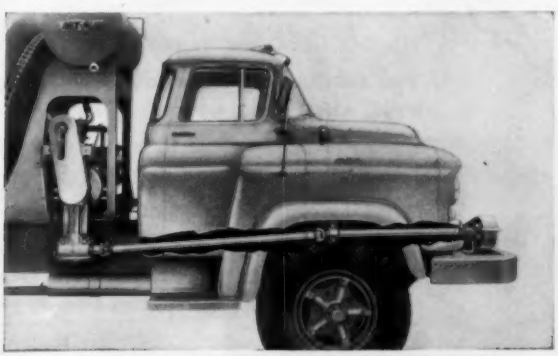
by minimizing mixer maintenance,

by extending the choice of mixer and equipment to cover every type of need.

Hundreds of pounds weight have been "designed out". The rear cradle is open and clean, front trunnion and drive are unitized, center of gravity is shorter, all weight is carried within the width of the truck frame.

With Jaeger 3-speed transmission (either automotive-type or hydraulic reversing) you can fast-charge at 16 rpm, mix fast or agitate as slow as 1½ rpm, and use any discharge speed the job calls for—all without engine racing or lugging. Hoppers, drum opening and blades are designed to provide the fastest material intake and discharge of any mixer built today.

At the job, Jaeger's new easy-to-handle chute is another time saver. It is wider and deeper to handle the fastest discharge without spilling. Quick flip-over 3′ extension and fixed pivot point make one-man handling easy. Can be instantly released and swung aside for dumping direct into high forms or buckets.



SEPARATE ENGINE OR JAEGER PTO

Separate engine drive, as used on many thousands of Jaeger truck mixers, is standard on the Model "F". Where truck engine drive is wanted, Jaeger provides the only front-of-engine pto operated from both cab and ground by finger-touch hydraulic control. Permits start, stop and reverse of drum *while traveling;* foolproof to operate, easy to install at factory or in field, and simple to maintain.

Ask your Jaeger distributor for full details—or send for Specification TMS7.

THE JAEGER MACHINE COMPANY
522 Dublin Avenue, Columbus 16, Ohio
Jaeger Machine Co. of Canada, Ltd., St. Thomas, Ontario

MASONRY MANUFACTURERS! *There's a lot of useless back-breaking digging involved in uncovering new construction business . . . unless you have someone breaking ground for you . . .*

We help do your spadework for finding business

Trying to uncover new construction business by looking everywhere is the costly way to get the jobs you want. The best, most economical method is to let Dodge Reports pin-point exactly the kind of construction activity you're looking for right in the area you serve. If you'd like to see how this timely, accurate daily report service can get you more and better business, just read, then mail this coupon today.

TO: **DODGE REPORTS**, DEPT. 67, 119 WEST 40th STREET, NEW YORK 18, N. Y.

Yes! I'd like to see how to get more business by knowing in advance who's going to build, what, when, where.

I want to know whom to contact and when to submit bids.

I'd like to see some Dodge Reports, and I'd like a copy of your booklet that tells how to use this accurate, daily, up-to-the-minute construction news service.

I understand that I can pick just the area in the 37 Eastern States and the type of construction activity that interests me. Also, that I won't have to wade through mounds of data to find the information I need.

I'm interested in General Building ☐ **House Construction** ☐ **Engineering (Heavy Construction)** ☐

In the Following Area: _____

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Dodge Reports
For Timed Selling to the Construction Industry

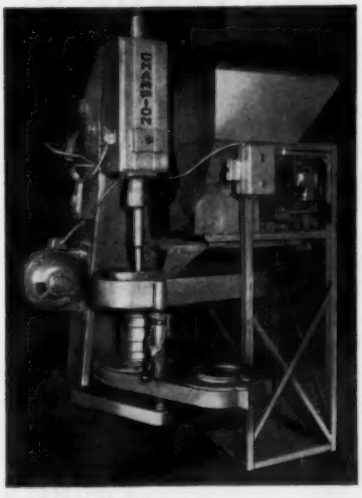
T-12

Are You Passing Up the Profits in Drain Tile?

If you have fifty square feet of factory floor space to spare — plenty for a Champion installation — you can become a local manufacturer of concrete drain tile on an amazingly small investment. Dollar for dollar invested, drain tile production can easily be the most profitable part of concrete products manufacturing. Ton per ton of materials used, their conversion into concrete drain tile gives them the maximum resale value.* It's an opportunity for YOU!

Tile made on the Champion have values that no clay tile can match, yet sell for far less without jeopardy to manufacturing profit. Makes all sizes up to 12" diameter at remarkably small labor costs. Descriptive literature and other information is free for the asking. Write today.

W. E. DUNN MFG. CO. · 526 W. 24th Street · Holland, Michigan
976 Dundas Highway, Cooksville, Ontario, Canada



** $21.50 worth of cement and aggregate becomes $80.00 worth of concrete drain tile. Figures are estimated averages.*

BENDIX DYNA-COM 2-WAY RADIO— TAILOR-MADE FOR TRANSIT MIX!

No doubt about it! Transit mix concrete is a perishable product and delays can mean the difference between profit and loss. That's why more and more transit mix suppliers are equipping their trucks with Bendix* Dyna-Com 2-Way Radio—speeding deliveries and cutting costs as much as 25 percent. They've learned that Bendix Dyna-Com—the first big advance in 2-way radio in over a decade—is literally tailor-made for operations involving critical, co-ordinated timing.

Here's what Dyna-Com can do for you: Give dispatcher and drivers instant voice contact enabling tighter schedules to be maintained on each job; drivers can inform dispatcher or batch plant immediately if there's a change in mix orders or delivery schedule; breakdown and mired trucks can be reported at once and wrecker dispatched in time to save load and costly chipping job; eliminate load dumping by dispatching concrete in excess of one contractor's needs to another job site.

Now's the time to let a Bendix communications expert show you how Dyna-Com 2-Way Radio will boost your operating efficiency. Drop us a line telling when you'd like to see him. No obligation, of course.

*REG. U.S. PAT. OFF.

Bendix Radio Division

Mobile Products Sales • Baltimore, Maryland

Bendix AVIATION CORPORATION

Here's why you get more payload, greater profit with a Blaw-Knox Trukmixer

Every part of these new Blaw-Knox Trukmixers is designed to give you the most compact, accessible truck mixer or agitator possible. The Blaw-Knox Hi-Boy will give you a maximum payload within legal limits on the shortest possible wheel base. By mounting the transmission at the end of the combination pedestal water tank, and the engine at the rear, the distance from the front of the mixer to the loaded center of gravity was reduced 20". This made possible a shorter wheelbase and a more maneuverable truck, since the load is distributed evenly between the axles.

For greater safety and easy maintenance the engine is mounted on the left side of the mixer. This enables the driver to see the unit when backing the truck and also permits easy accessibility to vital parts.

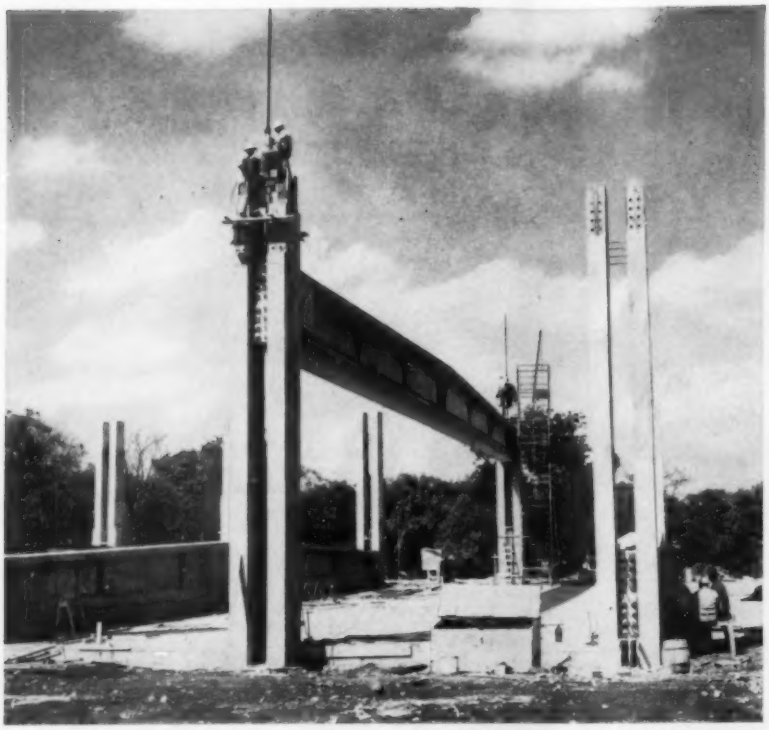
A new Blaw-Knox water system permits the operator to introduce mix water through the charging end of the mixer as well as through the drum head. This system is designed for easy field conversion from transit mix to job site mixing without alterations to the mixer. To prevent freezing of water in the pump and piping during cold weather operations, a drain cock arrangement for draining the entire system is standard equipment.

For more detailed information on the Blaw-Knox Trukmixer see your Blaw-Knox dealer or write for Bulletin No. 2455-R.

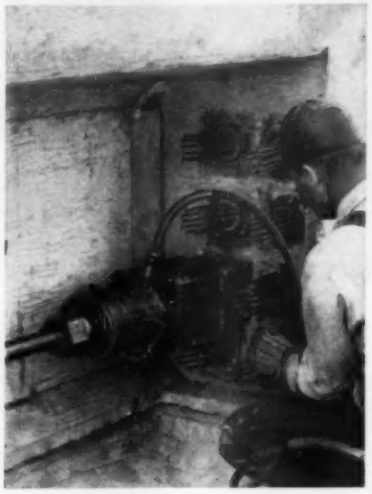
BLAW-KNOX

BLAW-KNOX COMPANY

Construction Equipment Division
33 Charleston Avenue, Mattoon, Illinois



PRESTRESSED GIRDER, hoisted by hydraulic jacks, nears top of columns. 132 lb. steel rail, inserted through holes at sides of the columns, supported girders until they were connected to the columns.



A TOTAL FORCE of 1,570,000 pounds was applied to each joint through 8 cables installed between columns and end blocks of girders. Cables consisted of twelve ¼" high-tensile steel wires encased in a 1½" steel sheath. Faces of columns and girders were carefully grouted for uniform bearing.

SMOOTH CEILING inside gymnasium of Parkview High School, Springfield, Missouri, results from resting precast channel roof-slabs on lower flanges of girders. Richard P. Stahl, Springfield, Missouri, architect. Prestressed girders and columns by Prestressing Research & Development, Inc., San Antonio, Texas. J. E. Pyle Construction Company, of Little Rock, Ark., contractor.

Concrete roof frame 146 feet wide and rigidly tied

EIGHT CONTINUITY CABLES, stressed to a total force of 1,570,000 pounds at each joint, tie 146′ prestressed concrete girders and unusual twin columns into a rigid frame for the combination auditorium-gymnasium of the Parkview High School, Springfield, Missouri.

Precast and stressed on the concrete floor of the gymnasium, directly below their final position, the seven 104-ton girders were lifted to the tops of the 30′ columns by the same hydraulic jacks used for prestressing. After placement of precast concrete roof-deck slabs, continuity cables at the joint between girders and columns were installed and stressed.

Concrete, including 5,000 psi mix for the girders, was placed at an average of 1,000 cu. yds. a month, delivered on schedule, properly processed in truck mixers of certified design, capacity, mixing speed and water control accuracy.

5 1/2 CUBIC YARD
MIXER
MAXIMUM CAPACITY
CERTIFIED BY THE TRUCK MIXER MANUFACTURERS BUREAU TO COMPLY WITH ITS STANDARDS FOR TRUCK MIXERS AND AGITATORS AS APPROVED BY THE N.R.M.C.A.
7 1/4 CUBIC YARD AGITATOR
UNLESS RATED LOWER ON THE MANUFACTURER'S DATA PLATE

You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.

BLAW-KNOX CONSTRUCTION EQUIPMENT DIV.
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CHAIN BELT COMPANY
Milwaukee, Wis.
CHALLENGE MANUFACTURING CO.
Los Angeles, Calif.
CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.
CONSTRUCTION MACHINERY CO.
Waterloo, Iowa
THE JAEGER MACHINE COMPANY
Columbus, Ohio
THE T. L. SMITH COMPANY
Milwaukee, Wis.
WESTINGHOUSE TRANSIT MIXER DIV.
Indianapolis, Ind.
WHITEMAN MANUFACTURING CO.
Pacoima, Calif.
WILLARD CONCRETE MACHINERY CO., LTD.
Lynwood, Calif.
WORTHINGTON CORPORATION
Plainfield, N. J.

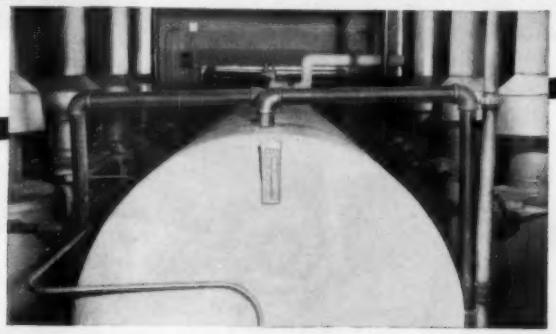
A REPORT

Burkays Provide Enough 160° Hot Water for 90 cubic yards of concrete per hour during peak loading periods at the Grand Rapids Gravel Co. Grand Rapids, Michigan

This plant is capable of loading fifteen six-cubic-yard trucks per hour . . . one every four minutes. Each six cubic yard load of concrete requires about 200 gallons of 160° water. This includes water added at the batcher plant with the mix and water needed for cleanup . . . a total of 3,000 gal/hr.

It was decided that to supply sufficient hot water, at an inlet temperature of 40° and an outlet temperature of 160°, eight Model 718 A. O. Smith *Burkay* water heaters and an 1800 gallon storage tank would be used. This combination of units and storage tank would supply 3,972 gallons for the first hour and right after the lunch hour. The 972 gallons of surplus hot water remaining in the storage tank after a peak period and the total heater capacity of 2,712 gal/hr. would be sufficient to carry the load. Another Model 718 *Burkay* in a closed system (filled with permanent anti-freeze) is used for radiant heating of the aggregate bins for easier material handling.

This installation was designed by the Radiant Heating and Supply Co., of Grand Rapids.



Successful Redi-Mix operation in coldest weather

USING PLENTY OF HOT WATER

generated economically by reliable **Burkay®** GAS-FIRED **WATER HEATERS**

Burkay Model 718

Burkay industrial water heaters are of "all copper," corrosion-free construction • Highly efficient patented burner • Exclusive heat exchanger for maximum heat transfer and economy • Dependable • Long Life • Compact • Operates on all gases • A.G.A. approved • Bears the A.S.M.E. seal of approval • Completely automatic • Complete range of sizes to fit your needs. • Fully guaranteed. A good investment.

● At approximately one-half the initial cost of a central steam unit and operating daily, by comparison, at a considerable savings, the *Burkay* hot water installation has fully proved itself to the Grand Rapids Gravel Co. The system has been in operation since October, 1956, and is meeting all expectations.

You, too, can operate year 'round . . . and profitably. Freezing temperatures need not bring your winter Redi-Mix operation to a halt. Not when you can have all the hot water from *Burkay* water heaters that you want, when you want it, and at any temperature you want so that the concrete can set before it freezes. You can supply builders and contractors through the year on schedule.

Rugged *Burkay* gas-fired industrial water heaters are the simple answer to mixing concrete dependably during freezing weather. The entire heater operation is automatic. *Burkays* require minimum care and maintenance. They fit in any out-of-the-way place. Any number of heaters can be connected to get the volume and temperature of water you need. Call your A. O. Smith distributor for full details and application recommendations.

Through research ...*a better way*

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CORPORATION
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International Division, Milwaukee 1, Wisconsin

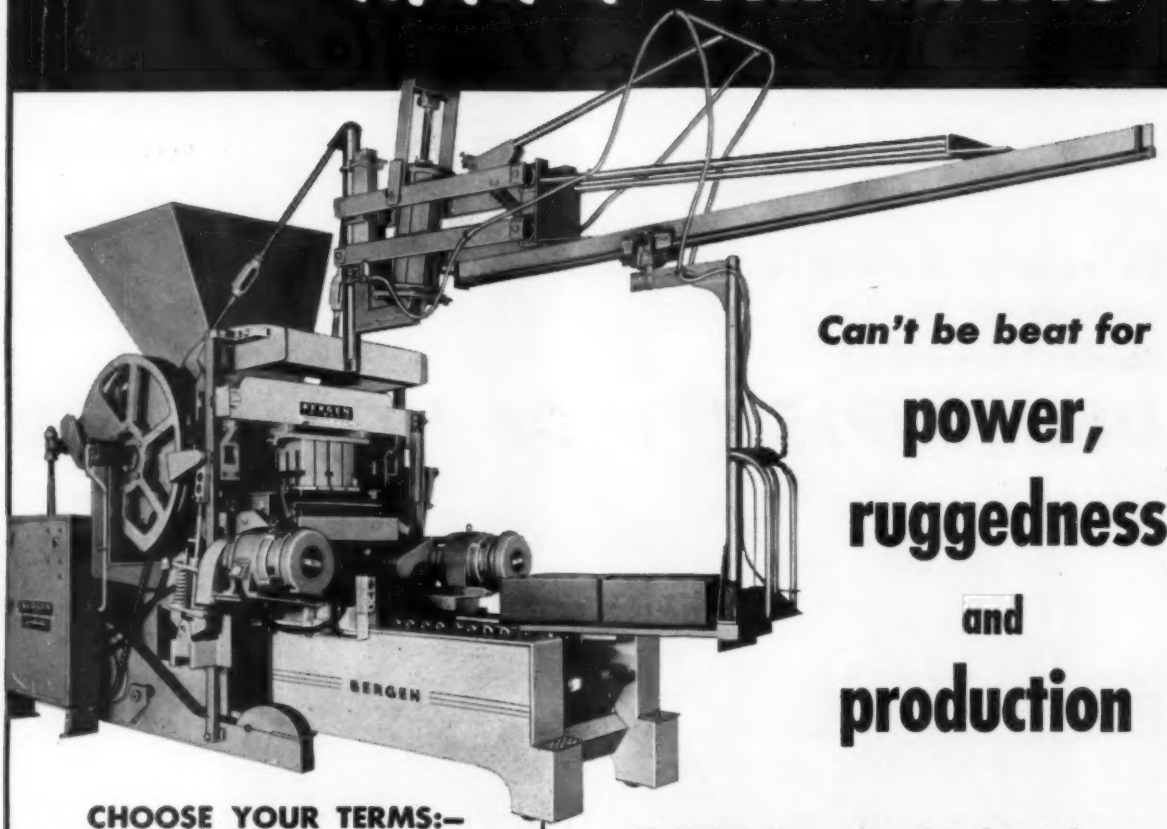
Send for FREE information

A. O. SMITH CORPORATION
Permaglas Division, Kankakee, Illinois
Gentlemen: Please send me full details on Burkay gas-fired industrial water heaters for any Redi-Mix plant.

Name.....Title.....
Company.....
Address.....
City.....Zone....State.....

makers of famous **Permaglas®** *glass-lined water heaters...* **Permaglas®** *heating and cooling*

NO BETTER Block Machine than a TRI-MATIC



Can't be beat for

power, ruggedness and production

CHOOSE YOUR TERMS:–

1. **CASH**
2. **TIME PAYMENTS**
3. **"LEASE-WITH-OPTION-TO-BUY" CONTRACT**

(NON-ROYALTY, FIXED MONTHLY PAYMENT)

No block machine on the market today exceeds the TRI-MATIC for the essential features of heavy-duty construction, designed for and producing the finest block at maximum speed.

If you want high production, Tri-Matic is designed to run without strain at rates up to 6 mold cycles per minute, yielding an average of 10,000 — 8" equivalent units per typical 10 hour day. If you want power and ruggedness, just check the size of all motors, shafts, pulleys, etc. . . . AND — not one ounce of quality workmanship or material is sacrificed ANYWHERE on a TRI-MATIC.

Compare a TRI-MATIC WITH ANY MACHINE ON THE MARKET—you'll see why the BERGEN TRI-MATIC can't be beat!

BERGEN
MACHINE & TOOL CO., INC.

NUTLEY, NEW JERSEY

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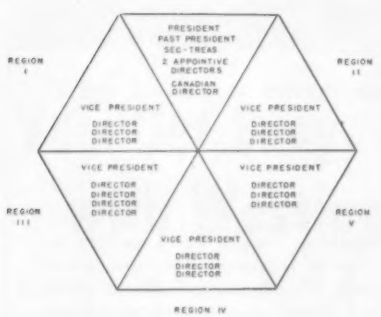
INDUSTRY NEWS

NCMA Announces New Organizational Structure to Develop Closer Relations with Producer Members

A quite comprehensive reorganization of the National Concrete Masonry Association, approved by the association's board of directors at its mid-year meeting, has been announced by Walter W. Underwood, executive secretary.

The plan is to set up an organizational structure and administrative system which will greatly facilitate communication between NCMA and its producer members. This is to be accomplished by development of

BOARD OF DIRECTORS



leadership at the local and regional level, establishment of a field program at the local and regional level, and the holding of local and regional meetings to reassess the work and program of NCMA.

First step in the new program is to regionalize the administration and election of NCMA directors. The five regions, as presently considered, are shown on the accompanying map. The proposed regional division is based on three considerations: membership population; travel considerations; and use of administration from a staff standpoint. Board representation under the regionalized structure is also shown in an accompanying chart. As indicated, each region eventually will have at least three directors and one vice president on the national board. This total will evolve over a period of three years, and concurrent with the retirement of present board members. As shown on the chart, Region III will eventually elect a fourth director. Presently there are 148 producer members of NCMA in this region, and in line with the new program, whenever the producer members in any region number more than 100, that region will be allowed another director for each additional increment of 50 producer members. This will afford the larger regions more equal representation on the national board.

At the expiration of a three-year term, directors would be ineligible for re-election for a period of not less than one year. They might, however, serve as officers elected by the board. Thus, regional vice presidents would usually be serving in their fourth consecutive year on the board. Also the president of NCMA could traditionally be elected from the group of five outgoing vice presidents, and the secretary-treasurer could continue in office for an indefinite period. The two appointive directors would be at the discretion of the president with the approval of the board.

A regional manager in each of the five sections is one of the long-range goals in the new NCMA program. In round numbers, it is considered that $20,000 and 40 new members are the approximate regional increases needed before appointment of a regional manager would be sound financially. A regional manager would handle administrative functions and membership matters in his region. He would function as the executive director's personal representative and would work closely through the regional vice president, who would act as the personal representative of the president, particularly upon membership matters. Regional managers, working through the medium of frequent, well-organized, area meetings, would implement the efforts of the home office staff, officers and members toward "selling" the NCMA current program to members and prospective members, thus building the membership and gaining added support from existing members.

The regional system would also provide for accepting local associations into affiliation with NCMA as chapters or districts within the regions with full reciprocity of membership wherever negotiations with a local group indicated feasibility and desirability of affiliation. Allowance would be made through a "grandfather" clause in local charters for the continuance of existing membership relations which would otherwise jeopardize the affiliation program. After affiliation, however, all new members of both the local and national association would be subject to the full reciprocity clause.

The move toward affiliation of a local group could be initiated by an existing unaffiliated group upon a negotiated basis, or NCMA itself might seek to set up a local association and to grant a charter to such a group.

POSSIBLE REGIONAL BREAKDOWN

The NCMA staff would be authorized to furnish staff to serve such local chapters or districts where the local group levied a voluntary dues increase to NCMA sufficient to justify the additional staff and administrative expense. The sole responsibility of such a staff to the NCMA home office would lie in the direction of membership maintenance and in reporting the activities of the local group to the NCMA executive director. The staff's membership activities would, of course, be equally beneficial to the local and national associations under the reciprocity agreement.

Under the new program it is planned to have at least one meeting in each region each year. The purpose of these meetings would be to have all members participate in a thorough re-appraisal of the entire program of work of NCMA. As a result of the meetings, a long-range membership goal would be established and an orderly expansion of the program of work could be planned.

A new set of by-laws embodying the regionalization program is under preparation by a committee set up by NCMA president Philip Paolella. Serving as head of the committee is Jay C. Ehle, Cleveland Builders Supply Company. The others on this committee are: Albert R. Waters, Carter-Waters Corporation, Kansas City, Missouri; Max H. Miller, United Cement Products Company, Wichita, Kansas; Franklyn L. Williamson, Holloway Concrete Products Company, Incorporated, Winter Park, Florida; and Sam Paturzo, V. Paturzo Bro. & Son, Incorporated, Baltimore, Maryland.

■

Block Statistics, Freight Rates to be NCMA Studies

Two committees, one to research and compile statistics on the block industry and the other to study freight rates, were set up by NCMA board of directors at their mid-year meeting in July at Murray Bay, Quebec, Canada.

Chairman of the committee on statistics is Carl F. Spickelmier, Spickelmier Company, Indianapolis, Indiana. Leonard Jones, Chandler Materials Company, Tulsa, Oklahoma, will head the committee on freight rates.

Everybody's Business

EARNINGS

- Second quarter earnings, according to a survey of 484 companies taken by *The Wall Street Journal*, showed a slight increase over earnings for the same period in 1956. Figures for the period this year were $2,545,288,000, up 2.4 per cent over last year's second quarter figure of $2,484,618,000.

- Most of the industry groupings that moved upward did so in a fairly narrow margin when compared with those that lost. Office equipment showed the largest percentage gain, with an increase of 21.3 per cent. Tobacco companies were next with an increase of 17.6 per cent; and following closely were autos and equipment, up an even 17 per cent.

- As expected, the 26 building materials companies reported in the survey showed a decrease, off 11.3 per cent. These companies reported a net profit of $99,275,000 this second quarter, compared with $111,752,000 during the 1956 second quarter.

- The big loosers this quarter, though, were: airlines, off 48.3 per cent; textiles, down 37.5 per cent; mining and metals, off 36.7 per cent; and distillers, down 27.8 per cent.

- Overall, 15 industry groupings reported an increase, and 11 showed a decline.

MATERIALS

- Still others of the cement companies, besides Ideal (which we reported last month as planning a price increase) have announced intentions of raising prices at the mill. But, Arizona Portland, going against the trend, cut its mill price $.15 a barrel in July, and Alpha Portland Cement Company has announced it is planning to hold prices for the present.

MONEY

- Cost of borrowing money is still very high, but some believe the peak has now been reached. Within a few weeks after the Government was forced to pay over four per cent on a small quantity of short-term bills, Federal Reserve Board Chairman Martin stated he believes rates soon may level off and, perhaps, head downward. In the mean time, both the interest charged member banks by the Federal Reserve and charged prime borrowers by some large banks in the nation went up slightly.

- Reaction to the recent lowering of down payments and raising of interest rates on Federal Housing Administration insured home mortgages has been quite mixed. Home builders generally were hoping—some were definitely expecting—the new lower down payments would bring a number of home buyers, who previously couldn't raise the down payment into the market. But, opposed to this, a number of lenders were unwilling to put more money out at the still-low interest rate of 5¼ per cent. They couldn't see why they should invest at this rate when their money could be earning more (5½ to 6 per cent) in other areas, and with just as good or perhaps better security.

7 yd. model, with drum closure, pouring addition to flood control wall for Waterbury Ready-Mixed Concrete Co., Waterbury, Conn.

You Get Easy, Positive Control with Westinghouse Mixers

• With the Westinghouse drum-control transmission, one lever and the engine throttle you have positive and complete control of the drum for any operation . . . . With the large Westinghouse charging hopper, set the transmission in high and charge the drum as fast as you want to without blowback. . . . Leave the setting in high and the drum, with double-action mixing blades, gives you fast, thorough, customer-satisfying mixing. . . . Set the transmission in low and agitate at 2 r.p.m.

To discharge, reverse the single-lever drum control and discharge as desired —from full blast to a shovelful at a time. No gears to shift.

And with This Simple and Easy Control You Get

. . . the exclusive Westinghouse fully-enclosed gear drum drive with large ball-and-socket drum mounting. Nothing like it. No chains to break and let you down with a load aboard. Cuts maintenance costs, too.

. . . convenient 3-piece discharge chute. Can be swung away for direct discharge or used in 5, 8 or 12 ft. length. Ratchet or hydraulic control.

. . . sturdy, clean-cut design and construction. Easy to service; longer-lived than most mixers.

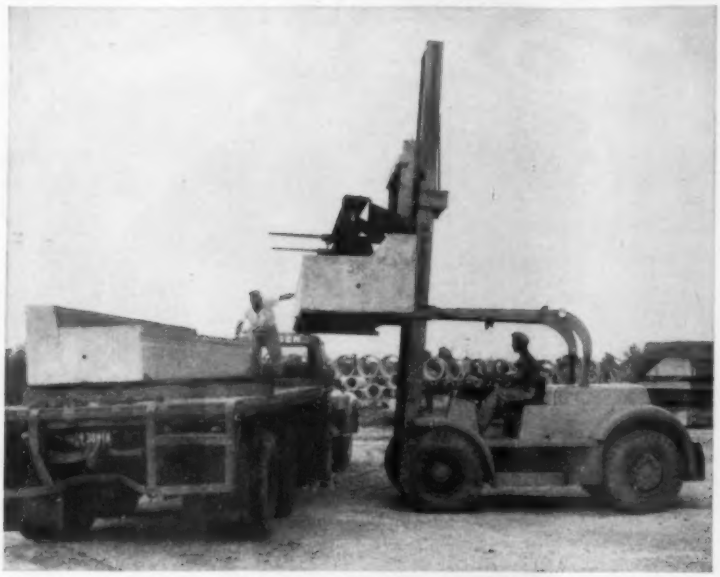
Before buying another mixer be sure to see your local Westinghouse Transit Mixer dealer for new 1957 catalog or write to

WESTINGHOUSE TRANSIT MIXER DIVISION
LeTourneau-Westinghouse Company • Indianapolis 6, Indiana
Member Truck Mixer Manufacturers Bureau

Demonstrating the easy operation of Westinghouse mixers is this 4'-2" man, weighing 105 lbs., discharging into wheelbarrows with perfect control. He's the regular operator.

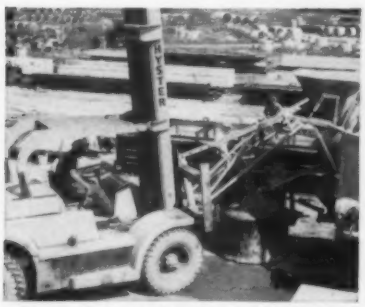
Westinghouse Mixers are available in 5, 5½, 6 and 7 yd. sizes built to TMMB standards.

LIFT TRUCK SPEEDS HANDLING OF MULTI-TON PRECAST BRIDGE SLABS



Loading out an eight-ton bridge section

Hyster 200 also transports pipe



Boom attachment handles pouring bucket

EAST ST. LOUIS, ILLINOIS — Using only two men and a Hyster 20,000 lb. capacity lift truck, the Nelson Concrete Culvert Co., Inc., quickly loads out precast concrete bridge slabs weighing up to ten tons. Previously four men and a large truck mounted crane were required for this operation.

Because the Hyster 200 is exceptionally maneuverable, aisle requirements also have been sharply reduced. Result: Extra storage space at no extra cost. And, severe mud conditions and uneven terrain in the yard don't affect production schedules in bad weather. The high tractive efficiency and mudability of this truck enables full production the year around.

You can make impressive savings in handling costs, too. Ask your Hyster dealer to show you the Hyster movie, "Concrete Progress", devoted entirely to money saving materials handling practices. Or, write for booklet, "Effective Ideas For Handling Concrete Products".

Call your Hyster Dealer. He is in the yellow pages under "Materials Handling" or "Trucks-Industrial"

HYSTER COMPANY

Hyster Industrial Trucks Increase Profits for Concrete Products Manufacturers

Factories: PORTLAND, OREGON
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PEORIA, ILLINOIS
NIJMEGEN, THE NETHERLANDS

● Governor Luther W. Hodges, North Carolina (left) and Virginia Attorney General J. Lindsay Almond, Jr. (right), cut ribbon opening new Solite plant at Leaksville Junction, Virginia, as corporation president John W. Roberts watches.

Florida Prestress Group Receives PCI Affiliation

S. P. Johnson

Sam P. Johnson of West Coast Shell Corporation, Sarasota, Florida, is president of the recently organized Florida Prestressed Concrete Association. Since February the group has been forming with the help of Colonel Martin P. Korn, executive secretary of the Prestressed Concrete Institute.

Mr. Johnson approached the PCI board of directors at the World Conference on Prestressed Concrete and received official PCI affiliation for the Florida association. This is the first state group to be affiliated with the institute.

Serving with Mr. Johnson as officers of the association are vice-president William Noonan, Noonan Construction Company, Pensacola, and secretary Charles Phillips, Juno Prestressors, West Palm Beach.

■

Our Error

We erred in a news item, June issue of CONCRETE, which stated the number of manufacturers producing prestressed concrete five years ago was zero. Mr. Philip E. Balcomb, manager, AMDEK division, Concrete Products of America division, American-Marietta Company, corrected us on this statement by pointing out that American-Marietta was producing units in 1950.

Structural Deficiencies A Factor in Fire Starts

The National Board of Fire Underwriters lists structural deficiencies of buildings as one of the main causes of fires resulting in $100,000 losses or more. These fires have contributed considerably to the $480,-445,000 losses sustained in the first five months this year.

A study of 662 large-loss fires was made by the board last year. It showed that structural deficiencies and delayed discovery of the fires were the two predominant causes. A third factor was the flammable contents of the buildings.

Fire losses averaged $88,000,000 per month in the first five months in 1956, the boom-year for large-loss fires. This year the figure is a high $96,000,000 monthly average for the same period.

■

Ready Mix Pioneer, V.E. Schevenell, Resigns Post

Vernon E. Schevenell, who introduced one of the first truck concrete mixers in the 1920's, recently resigned as president of his Memphis, Tennessee, firm, Schevenell's Ready Mix Concrete Company. He will continue to serve the company as chairman of the board.

David H. Bowlin moves up from vice-president to succeed Mr. Schevenell. Mr. Bowlin has been with the firm since 1935.

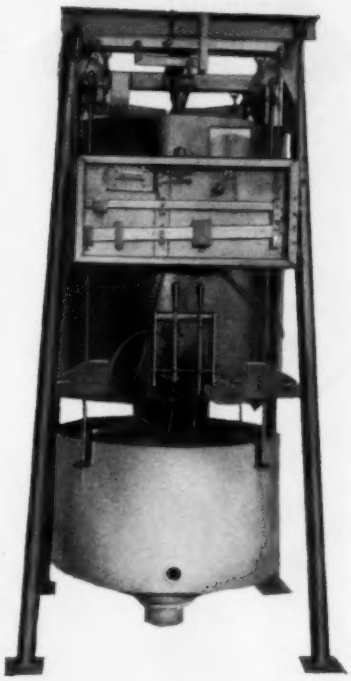
■

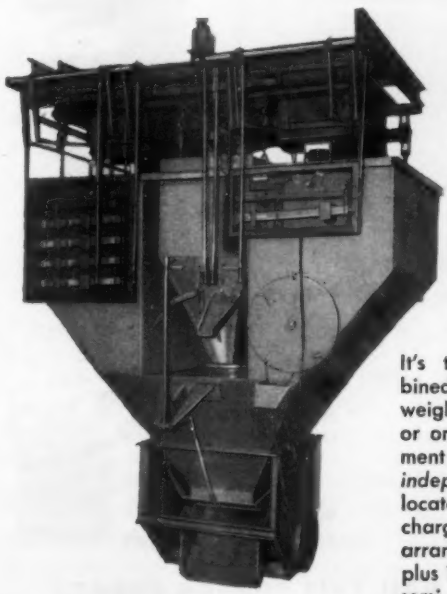
2 WAYS to increase batching efficiency

Accurate water weigh-batching

assures close quality control in production of ready-mix concrete. When water is batched by weight, accuracy is not affected by changes in water temperature — regardless of whether cold water is used in summer, or heated to 180°F. in winter. Reservoir type batchers also maintain top-speed weighing, even where low water pressure is encountered. To get this speed and accuracy in your plant, specify a Johnson water batcher.

2 sizes: 120-gallon (1,000 pounds) for batches up to 3 yards, and 240-gallon (2,000 pounds) for batches up to 6 yds. Semi- or full-automatic.





Central cement-feed

prevents "gumming", reduces dusting, and pre-shrinks materials. You get this unique advantage with Johnson Concentric batcher, because the aggregates are arranged concentrically around the cement. All ingredients are intermingled as they flow through discharge.

It's two separate batchers combined in one unit. Aggregates are weighed on accumulative dial scale, or on individual beam scales. Cement is weighed separately on an *independent scale* in a centrally-located, sealed hopper. Dual discharge available. Sizes: 2 to 8 yds., arranged for 2 to 8 aggregates, plus 1 to 4 types of cement. Manual, semi- or full-automatic operation.

Want more facts?

mail to: C. S. JOHNSON CO., Champaign, Ill. *(Koehring Subsidiary)*

Send us literature on: *Water batchers* *Concentric batchers*

NAME_____ TITLE_____

COMPANY_____

STREET_____

CITY_____ STATE_____

V2 BW CONC

Combination WORKhorse and RACEhorse! that's

The new ROCKET "65"

Seldom do you find a piece of machinery that combines the strength, durability and dependability of a WORKhorse with the speed and mobility of a RACEhorse. But that's what ready-mix operators are saying about the new Rocket "65"—a versatile 6½ to 7 yard mixer. The Rocket is designed and engineered to operate for years at maximum efficiency, with surprisingly little maintenance. Every conceivable ease-of-operation feature, *plus* tremendous strength, has been *built in.*

After you've bought a Rocket, you'll agree that it is both the workhorse *and* racehorse of your fleet!

Also available in 3, 3½, 4, 4½, 5, 5½, 6 and 6½ yd. models.

ALL THESE FEATURES *at* NO EXTRA COST!

HYDRAULIC CHUTE CONTROL Is fully automatic. Controls grouped for easy access.

ALUMINUM EXTENSION CHUTE attaches to 36" fold-over addition to main chute. Total discharge chute: 12' 6".

ELECTRIC REVOLUTION COUNTER kit included; you can handle most specifications with the Rocket!

SPECIAL ALLOY, abrasion resisting steel used at all wear points.

UNOBSTRUCTED HOPPER, for rapid charging, no spilling or waste.

POSITIVE CHAIN DRIVE, flexible power, not affected by truck twist, road shock.

STANDARD INDUSTRIAL ENGINE, truck-type transmission. Repair parts readily available.

THREE-POINT SUSPENSION, one-piece cast steel precision machined ring.

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J. Clarke Is Director of Unit Masonry Association

L. J. Clarke

Announcement of the appointment of L. J. (Jack) Clarke as executive director of the Unit Masonry Association of Metropolitan St. Louis was made by Leo F. Havey, president of the group. Mr. Clarke has been general sales manager of the Leschen Wire Rope Division of H. K. Porter Company since 1954. In his new position Mr. Clarke will further the public service aim of the UMA by lending its assistance and service to the architect, engineer, public official, manufacturer of masonry units, laborer, and owner.

■

Top Officers of Building Research Institute Named

Charles H. Topping, senior architectural and civil consultant for E. I. du Pont de Nemours and Company, Wilmington, Delaware, has been elected president of the Building Research Institute for the 1957-58 year. Named vice-president is Harold L. Humes, who is vice-president of the Baldwin-Hill Company, Trenton, New Jersey.

Mr. Topping, former institute vice-president and chairman of the membership committee, succeeds Edmund Claxton, director of research for Armstrong Cork Company, Lancaster, Pennsylvania. Mr. Humes also is chairman of the programs committee.

■

New Colonial Sand Plant Will Have Cement Mill

Colonial Sand & Stone Company, New York City ready-mix supplier, is installing a cement mill on its recently acquired 300-acre site at Kingston, New York. Initial capacity of the mill is expected to be 2,500 barrels daily.

CEMENT BRIEFS

Southern Cement Company division of American-Marietta Company has opened a plant at Roberta, Alabama. Completion of a 420-foot-long kiln, together with other equipment, increases Southern's annual cement capacity by approximately 1.5 million barrels.

The Huron Portland Cement Company recently opened its Oswego district sales office in Oswego, New York.

National headquarters of Medusa Portland Cement Company were dedicated recently in Cleveland Heights, Ohio. The building is constructed of concrete to demonstrate the unlimited architectural use of this product.

Construction of the Mississippi Valley Portland Cement Company plant has begun at Redwood, Mississippi. By early 1958, the plant will be producing 680,000 barrels of cement per year, according to the present projected schedule.

The Toronto *Financial Post* reports that from the looks of the recent rush of cement orders in Canada, there may be a handling and transportation problem developing for the industry. Large construction projects, such as the St. Lawrence Seaway and the record roadbuilding plans in Canada this year are contributing factors, as well as the expanding capacity to produce cement.

■

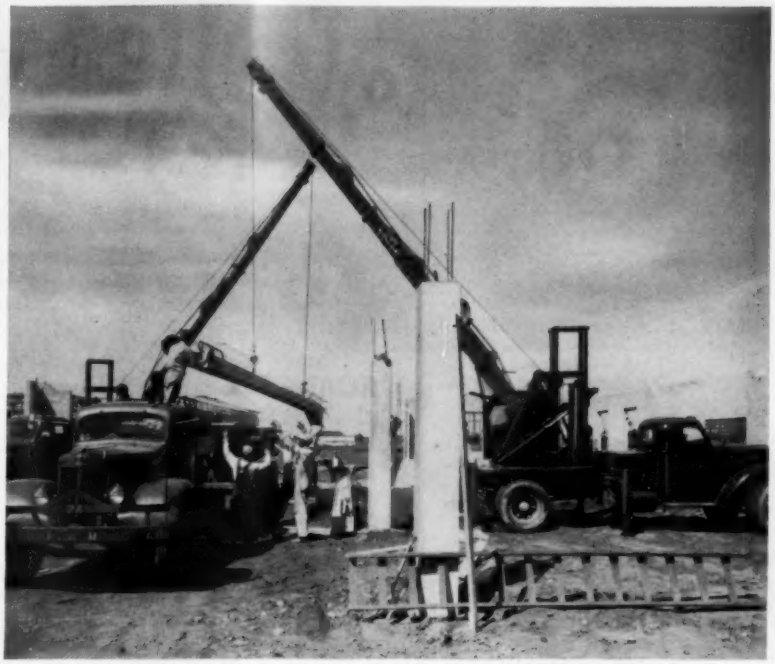
Cement Production

Shipments of finished portland cement in May 1957, as reported to the Bureau of Mines, U. S. Department of the Interior, totaled 28,940,000 barrels. This is a nine per cent decrease from shipments in May 1956.

Apparent consumption was higher in 11 states and lower in the other 37 and in the District of Columbia as compared with May last year. This is indicated by a recent study of cement shipments into the various states.

"We use it—we choose it again"

...SAY 47% OF 1956 HYDROCRANE BUYERS



IT has happened again. The number of happy Hydrocrane owners who return to trade in an old Hydrocrane, or add a second, third and, in some cases, a fifth or sixth Hydrocrane—continues to grow year after year. Here is the record:

	1954	1955	*1956*
Per cent of repeat orders:	38.6%	43.8%	47%

What's more—the total number of machines sold to these 1956 repeat buyers was more than double the 1955 figure. Why? Let's look at the facts:

Hydrocranes have plenty of power and reach. Available in two models, either 5- or 10-ton rated capacity, they offer hydraulic telescoping booms with up to 50 feet of reach.

Hydrocranes are lightweight, compact and fast. All-hydraulic design eliminates hundreds of parts, permits mounting on a conventional truck. This makes Hydrocranes fast over the highways, maneuverable in traffic and a "squeeze-in specialist" on those close-quarter jobs.

If you are not now reaping Hydrocrane profits, take a tip from the growing group of satisfied owners who return again and again for *additional* Hydrocranes. See your Bucyrus-Erie Hydrocrane distributor for details. 191H57

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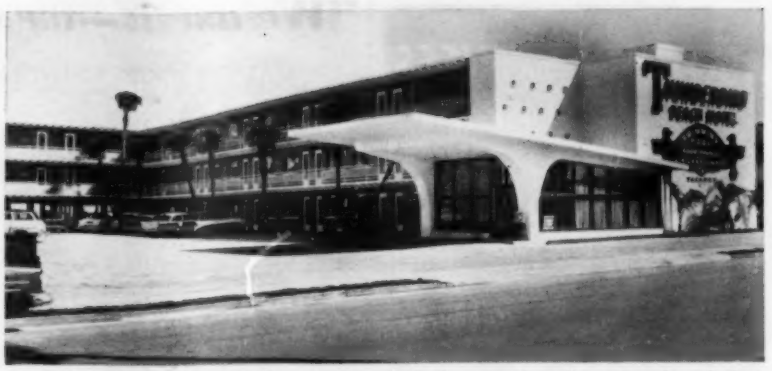
Calendar . . .

1957

OCTOBER 14-18	American Society of Civil Engineers — National Convention — New York City.
OCTOBER 21-25	National Safety Council — National Safety Congress and Exposition — Conrad Hilton Hotel — Chicago, Illinois.
NOVEMBER 4-6	American Concrete Institute — Regional Meeting — Benjamin Franklin Hotel — Seattle, Washington.
NOVEMBER 17-19	Southeastern Concrete Pipe Association — Tenth Annual Convention — Key Biscayne Hotel and Villas — Miami, Florida.

1958

JANUARY 16-18	National Concrete Products Association of Canada — Annual Convention — Chateau Laurier Hotel — Ottawa, Ontario, Canada.
JANUARY 19-23	National Association of Home Builders — Convention and Exposition — Hotel Sherman and Conrad Hilton Hotel — Chicago, Illinois.
JANUARY 22-23	Wisconsin Concrete Products Association — 38th Annual Convention —Loraine Hotel — Madison, Wisconsin.
FEBRUARY 9-12	Mason Contractors Association of America — 8th Annual Convention and Show — Mark Hopkins Hotel — San Francisco, California.
FEBRUARY 9-13	National Ready-Mixed Concrete Association — 28th Annual Convention — Chicago, Illinois.
FEBRUARY 10-14	American Society for Testing Materials — Committee Week — Hotel Statler — St. Louis, Missouri.
FEBRUARY 17-19	National Concrete Masonry Association — 38th Annual Convention — Chicago, Illinois.
FEBRUARY 26-28	American Society of Civil Engineers — National Convention — Chicago, Illinois.



● Prestressed double "T" floor and roof decks extend to form five-foot balconies on the three-story Thunderbird Motel, Daytona Beach, Florida. Perma-Stress, Incorporated, supplied the units in 20-foot spans.

ACAPA Convention Hears of Specification Changes

Reports to members of the American Concrete Agricultural Pipe Association, at the seventh annual convention in May, indicated progress of studies making changes in ASTM specifications of concrete drain tile, concrete irrigation pipe, and concrete low-head pressure pipe. Studies have been made in these areas in cooperation with officials of the Soil Conservation Service and of the United States Bureau of Reclamation.

Four major recommended innovations in drain tile specifications were presented formally to the association. Work in the other two fields is continuing, and progress was reported by the committees involved. A series of panel discussions by association members and guests took up subjects of interest in each of the three fields of study.

The full slate of officers from 1956 was re-elected to serve in 1957. They are: J. J. Seale, Concrete Conduit Company, Colton, California—president; Bruce N. Spencer, Jr., Gifford-Hill-Western, Incorporated, Lubbock, Texas—vice-president; Homer Peterson, Rockite Silo, Incorporated, Hutchinson, Minnesota—vice-president; Glenn Harriman, Indiana Lock Joint Company, Lafayette, Indiana—secretary; William B. Freeman, Lock Joint Pipe Company, Denver, Colorado—treasurer; and directors Earl H. Eby, Elk River Concrete Products of Montana, Helena, Montana; Charles E. Ward, Utah Concrete Pipe Company, Ogden, Utah; and G. D. Williamson, Valley Concrete Pipe and Products Company, Yuba City, California.

● American Concrete Agricultural Pipe Association's re-elected officers are: (seated from left) B. N. Spencer, Jr., vice president; J. J. Seale, president; W. B. Freeman, treasurer; (standing from left) Glenn Harriman, secretary; and E. H. Eby, C. E. Ward, and G. D. Williamson, directors.

PLANT NOTES

Coastal Concrete, Incorporated, was recently incorporated at Norfolk, Virginia.

The Empire Pre-Stressed Concrete Company of Oregon, a subsidiary of the Empire Building Materials Company at Portland, Oregon, has completed a $150,000 expansion program. New installations include a 400-foot pre-stressing bed and batching plant.

Maxwell Bridge Company has installed a ready mix plant at Columbus, Kansas.

Lorain Ready-Mix Concrete and Builders Supply, Incorporated, is expanding its Lorain, Ohio, facilities. Included is the pouring of a 40,000 square foot concrete area for storage of concrete block.

Quartzite Stone Company of Lincoln, Kansas, is expanding to produce concrete pipe units.

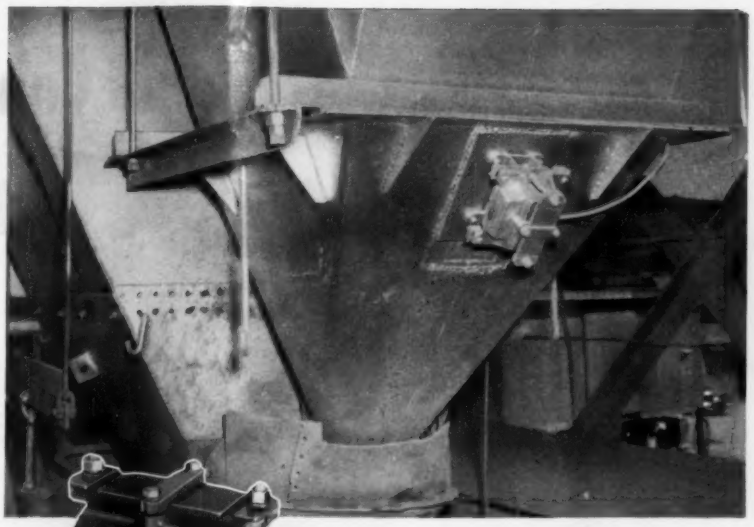
Collinwood Shale Brick & Supply Company has added an automatic batching plant to its Cleveland, Ohio, facilities. Expected hourly output is in excess of 100 cubic yards.

Rockwell City Ready Mix concrete plant is open at Rockwell City, Iowa. The company will serve Calhoun county and surrounding areas.

Harry T. Campbell Sons' Corporation of White Marsh, Maryland, has installed electronic batching facilities in its ready mix plant. The batching plant has a capacity of 150 cubic yards of ready-mix per hour.

Monroe Concrete Company is locating a second ready mix plant in West Monroe, Louisiana. The main office and plant are in Monroe.

Grenada Concrete Products Company, Grenada, Mississippi, has completed installation of a 420-foot prestressing bed.



Syntron Bin Vibrator on cement weigh hopper

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Their 3600 controllable vibrations per minute keep stubborn materials on the move — eliminate lag in production supply lines caused by materials arching and plugging in bins and hoppers. When attached to bins or hoppers, they utilize their powerful vibrations, instantly controllable from minimum to maximum, to set materials flowing through discharge openings to batch mixers, weigh systems, conveyor belts and other equipment. They eliminate inefficient and dangerous manual rodding and poking.

SYNTRON Bin Vibrators are available in Electric, Pneumatic or Hydraulic powered units in a range of sizes to handle from 1 cubic foot hopper to big bins and bunkers.

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Reporting the World Conference on Prestressed Concrete

- 1,270 visitors attend
- 26 nations represented
- 5 days of sessions

by HUBERT C. PERSONS

SOME 1,270 engineers, architects, concrete products and ready mixed producers and technicians meeting in San Francisco the week of July 29, proved again that what man can visualize he can create. The occasion was the World Conference on Prestressed Concrete. It was sponsored by the University of California department of engineeering in co-operation with 11 professional and technical organizations. At the same time and place, a group of the pioneer manufacturers of prestressed concrete held the third annual meeting of the Prestressed Concrete Institute. Those attending the World Conference came from 26 foreign countries, including the Soviet Union and from nearly every state.

The Conference program was dynamic, from the welcoming address by J. Ashton Gray, retiring president of the Prestressed Concrete Institute, to the closing summary by Conference co-ordinator, Professor T. Y. Lin of the University of California. The latter symbolized the optimistic attitude of engineers toward prestressing when he quoted a well-known Americanism, "You ain't seen nothin' yet."

Several speakers harked back to the first World Conference on Prestressed Concrete held at the Massachusetts Institute of Technology at Cambridge, Massachusetts, August, 1951. It was pointed out that although the progress in prestressing since that Conference has been spectacular, developments certain to come in the near future are so fantastic as to strain credulity.

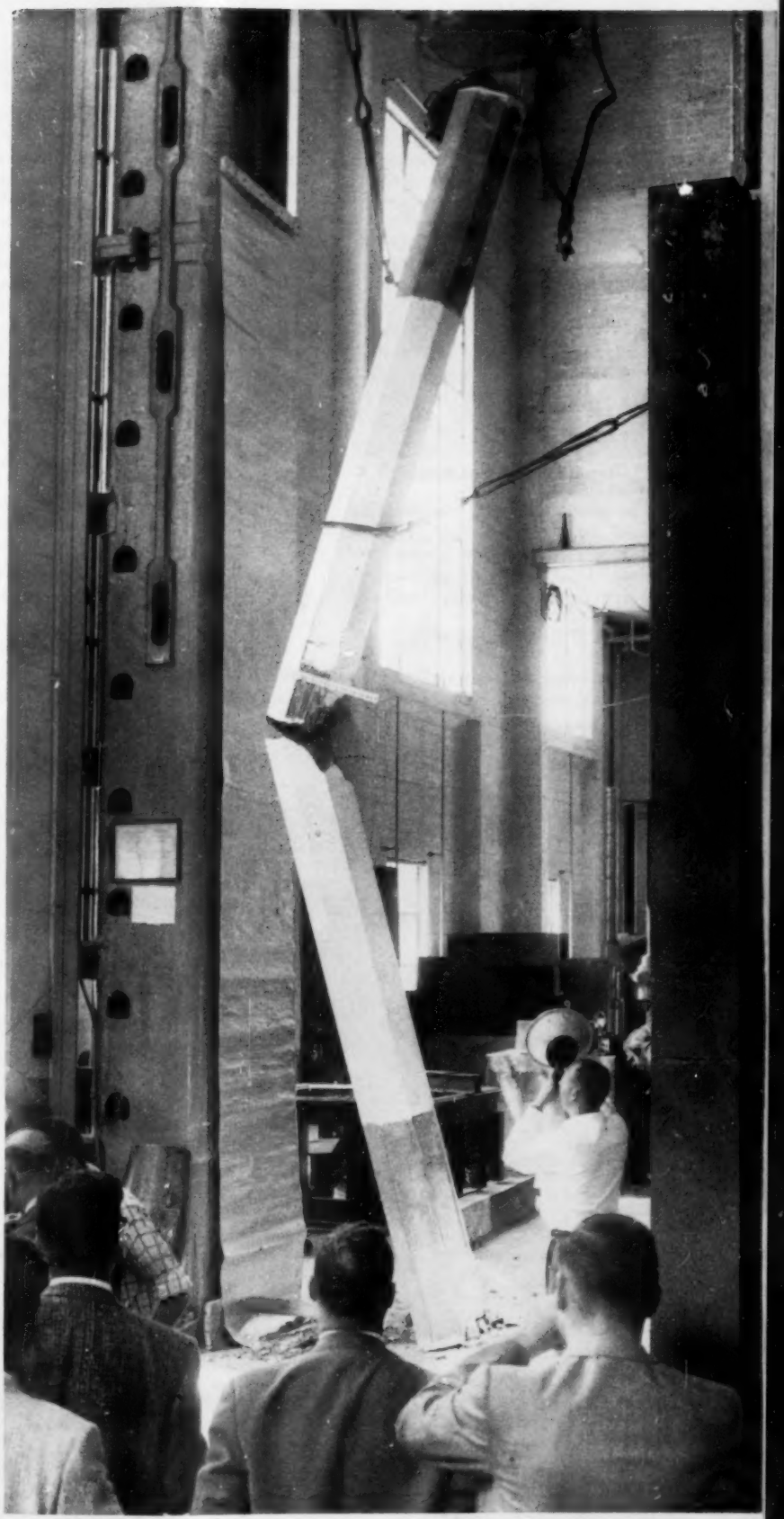
During the San Francisco Conference, visitors saw applications of prestressed structural members only hinted at as engineering possibilities six years ago. They heard an eminent European engineer predict the building of prestressed concrete suspension bridges with spans 1,000 to 1,500 feet long within the next five years.

The visitors listened to a description and saw motion pictures showing how Soviet engineers have applied automation to create a method of continuous and rapid prestressing of large structural members controlled by push buttons.

The Soviet's claim to have developed a "self-stressed concrete" was contained in a paper among the preprints of reports not delivered orally but which were distributed to all who registered for the Conference. This paper, to be included in the Conference proceedings, was entitled "New Developments in Self-Stressed Concrete" and was prepared by V. V. Mikhailov, professor and member of the Academy of Construction and Architecture of the U.S.S.R.

Although the Conference program gave much if its attention to manufacturing and designing techniques, the important subject of marketing was not neglected. One of two Manufacturers' Luncheons, given by the

● Pretensioned octagonal column, tested during Saturday's field trip through the engineering materials laboratory at the Berkeley campus, failed at 390,000 pounds. Loading on the column, which was cast at the Gerwick plant, was applied in increments of 50,000 pounds by a 4-million-pound universal testing machine.



Prestressed Concrete Institute as a part of the Conference program, included a lively panel discussion on "Marketing of Prestressed Concrete Products."

The professional and technical bodies serving as co-sponsors of the Conference with the University of California were:

Prestressed Concrete Institute
International Federation for Prestressing
National Science Foundation
American Concrete Institute
American Society of Civil Engineers
American Association of State Highway Officials
Association of American Railroads
American Institute of Architects
Associated General Contractors of America
Structural Engineers Association of California
Portland Cement Association

PCI Elects Officers

Before the general session of the Conference opened at 11 a.m. in the Gold Room of the Fairmont Hotel, the Prestressed Concrete Institute held its third annual meeting and membership breakfast in the same hotel. Ben C. Gerwick, Jr., president of Ben C. Gerwick, Incorporated, San Francisco, was elected president of the Institute. Other new officers are: Harold A. Price, manager of the structural concrete products division of Basalt Rock Company, Napa, California, elected vice president, and Peter J. Verna, Jr., president of Concrete Materials, Incorporated, Charlotte, North Carolina, elected secretary-treasurer. The following were elected as directors for two-year terms: J. Ashton Gray, Leesburg, Florida, president of Dura-Stress Incorporated, and retiring president of the Institute; George W. Ford, Ft. Lauderdale, Florida, vice president of R. H. Wright & Son; and Professor T. Y. Lin, of the civil engineering department of the Uni-

• World Prestressed Conference

versity of California at Berkeley, who did an outstanding job as Chairman of the General Arrangements Committee and Conference co-ordinator. One-year directorships will be filled by Jacob O. Whitlock of Midwest Prestressed Concrete Company, Springfield, Illinois; R. M. Dubois of the Freyssinet Company, New York; Forest B. Burtch of John A. Roebling's Sons Corporation, Trenton, New Jersey, and Philip E. Balcomb, of Concrete Products of America, Pottstown, Pennsylvania.

Opening of Sessions

The general session was formally opened by J. W. Kelly, professor and vice chairman for special programs, department of engineering, University of California. Professor Kelly pointed out that it was especially fitting to hold a prestressed concrete meeting in San Francisco because the first patent on prestressed concrete was issued to a San Francisco man, P. H. Jackson, in 1888. Chairman Kelly introduced Mayor George Christopher of San Francisco who delivered an official welcome address in which he said that prestressing will fill the needs of a vast construction program planned for the rapidly growing state of California.

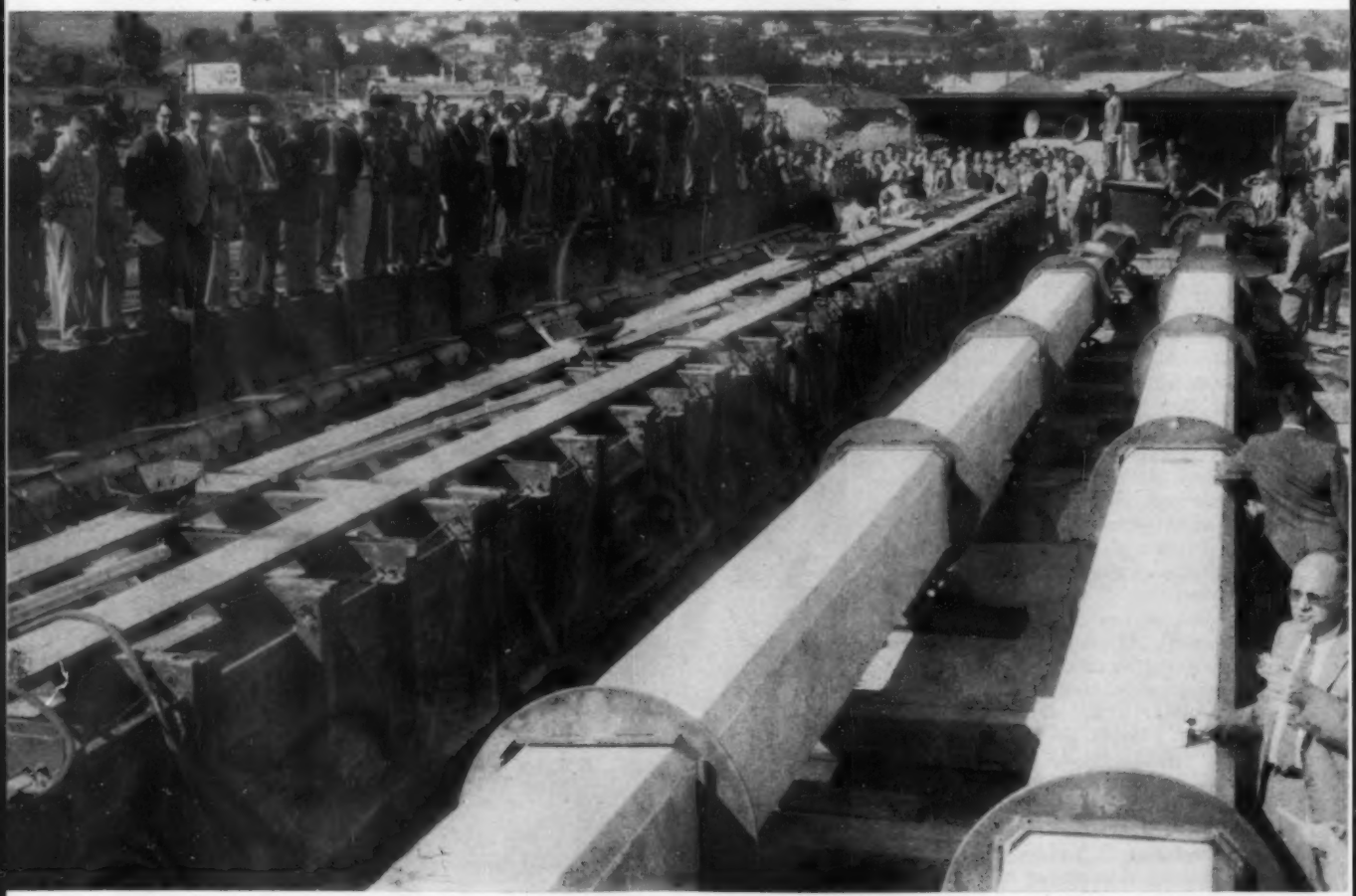
J. Ashton Gray, president of the Prestressed Concrete Institute during the past year, welcomed the visitors on behalf of the Institute. He predicted that the work of the Conference will advance the science of prestressing by years.

A greeting from Eugene Freyssinet, of France, president of the International Federation for Prestressing, was brought to the Conference by Philip H. T. Gooding, of London, general secretary of the International Federation. In his response to Mr. Gray's welcome, Mr. Gooding said that Eugene Freyssinet, whom many call "The father of prestressing," predicts that prestressed spans of 300 feet and more are coming in the near future. Mr. Gooding referred to the great advances in prestressing going forward in Europe and said that in England alone the use of prestressed concrete had doubled in the last four years.

Optimistic Future

The high spot of the opening program was an optimistic keynote address by William E. Dean, assistant State Highway Engineer of Florida, who called his talk: "Prestressed Concrete—A Youth Comes of Age." Mr. Dean was a member of the American Association of State Highway Officials—Prestressed Concrete

• Conference visitors watch preparations for applying stress to large concrete piles on Gerwick's casting bed. Forms have been stripped from 26-inch square piles with chamfered corners at right.



Institute Joint Committee which recently recommended four I-beam sections adaptable for use in all highway bridge spans from 30 to 100 feet.

Mr. Dean referred to the MIT Conference of 1951 and said that looking back one sees six years of gratifying accomplishment. "This progress," he said, "is a credit to Freyssinet and other European engineers." He pointed out that the fundamental principles of prestressing have long been available to engineers, and although these laws of the mechanics of materials were recognized by technologists in the nineteenth century, they remained dormant for many years. He expressed the belief that credit for devising practical methods of applying the principles of prestressing should go to Eugene Freyssinet and several other European engineers. "Today," he said, "prestressing is an international entity."

Mr. Dean praised the work of Professor T. Y. Lin and others at the University of California. "The prestressing industry could not have grown as it has but for the cooperation and sharing of ideas by all segments of the industry," he said. The speaker had especially high praise for the U.S. Bureau of Public Roads in encouraging the adoption of prestressing for highway bridges. He emphasized the world-wide character of the papers on the program and said the Conference was a splendid opportunity for exchange of ideas among engineers of various countries.

On a note of caution, Mr. Dean said he was sometimes disturbed at the thought that "we might get careless in assuming that we have now overcome the weaknesses of concrete. Quality must not be allowed to slip," he declared. "We must remember that prestressed concrete is an engineered material. Carelessness must be guarded against. Designers must design with care. Poor workmanship on the job must not be allowed to nullify engineering advances."

The speaker said that the prospect for future progress is startling. More than 25,000 tons of prestressed concrete products are being used annually right now, and in the next few years billions of dollars will be expended on prestressed structures. "Many new producers are being developed," he said. "The potential development is beyond comprehension. Increased technical knowledge will benefit the entire world. The future is not only promising but it is fantastic. This industry is barely coming of age now."

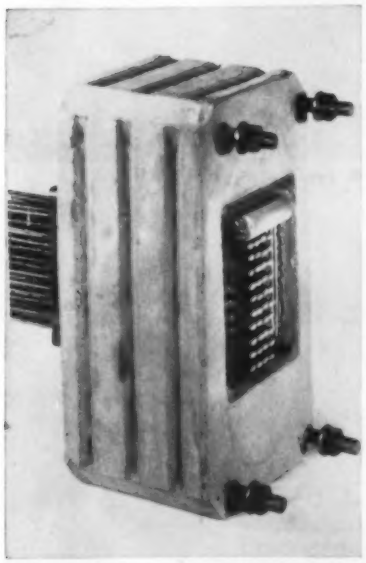
● Professor T. Y. Lin

● Professor J. W. Kelly

● William E. Dean

● New PCI officers (left to right) are Ben C. Gerwick, Jr., president; Harold A. Price, vice president; and Peter J. Verna, Jr., secretary-treasurer.

World Prestressed Conference
Visitors Listen to Engineers



● Recent German anchorage for 150-ton prestressing force

● 10,000 ton sugar silo in Germany of prestressed concrete

They talk about steel, cement, grouting methods, and lightweight aggregates

L. H. Corning, chief consulting structural engineer of the Portland Cement Association was chairman of the afternoon session, Monday, July 29. In introducing the first speaker, Professor W. Zerna of Hanover Technical University, Hanover, Germany, Mr. Corning said that "today we are pooling the knowledge of engineers from many different nations. The theme of the afternoon session was, "Materials and Techniques."

Professor Zerna's subject was, "Post-tensioning Systems and New Grouting Methods in Germany." The speaker said that German construction uses post-tensioning almost exclusively for major projects in industrial and public buildings and on bridges. As steel is the most essential element in the prestressing, Professor Zerna said this material is carefully investigated, and it must comply with rigid specifications and be guaranteed by the manufacturer. His paper was illustrated with slides showing cables, ducts, and different types of anchorages. In addition to discussing steels used in prestressing, Professor Zerna's paper covered descriptions of sheaths, spacers and anchorages. He also referred to recent German investigations of pressure grouting. His pictures included a prestressed concrete silo for storing 10,000 tons of sugar; a jointless prestressed concrete runway for testing automobiles, and a 150-ton anchorage for prestressing beds.

Study Steel's Behavior

"Prestressing Steel Under High Stress," was the subject of the second paper in the Monday afternoon session. The speaker was Walter O. Everling, director of research, American Steel and Wire Division, United States Steel Corporation, Cleveland, Ohio. Mr. Everling explained that his paper was a review of results of studies made by his company and others on the behavior of steel under high stress.

"Since the first United States Conference on Prestressed Concrete at MIT in August, 1951," Mr. Everling said, "much work has been done by individuals, companies, and organizations to help establish guideposts for the orderly development and application of prestressed concrete. The most recent contribution in this respect is the report of the ACI-ASCE Joint Committee 323, entitled 'Recommended Practice for Prestressed Concrete,' the first draft of which was issued December 15, 1956.

"You will recall that the purpose of this work was to do just what its name implies, that is, to put on paper, 'recommended practices' rather than final specifications, and to do it in such a way as to avoid the establishment of a limiting code at a time when the imaginative thinking of engineers should not be throttled prematurely. In this connection, it will be well to remember the words used in the first section of this joint ACI-ASCE report, namely that 'the safety and economy of structures in prestressed concrete will depend as much on the integrity of the engineers preparing the design and supervising or carrying out the construction as on the degree to which these recommendations are followed.'

"The late Professor Magnel, cofounder of prestressed concrete, told us in Toronto in January, 1954, that there is as yet no way in which an

● Prestressed concrete track for testing automobiles in Germany is constructed without joints.

● Session Chairman L. H. Corning (left) breakfasts with W. O. Everling, L. E. Hill, and Professor Zerna.

average engineer can open a handbook, look up a fixed code, and start to design a prestressed concrete structure. Rather the engineer will have to study and understand all factors involved. He is not, and perhaps never will be, absolved from the need to think for himself.

"In the spirit then of wishing to give the engineer the information on which he can base his imaginative thinking, and to supply him with the individual building blocks which he must put together in a complex interacting design, people, such as ourselves, have been studying the properties of the materials which our companies supply, ever since the concept of prestressed concrete captured our imagination."

Mr. Everling then reviewed the chemical analysis of high strength steel wire made from carbon steel and illustrated its mechanical properties with slides. He explained the different steps and different processes in wire manufacture and treatment. He said that "the question of safe steel stresses will have to be answered by determining the ultimate stresses in the total structure after creep and stress relaxation have run their course." With his paper Mr. Everling showed slides of the stress-strain curve for cold drawn prestressing wire, stress-relieved wire, oil tempered wire and lead patented wire all of 0.2-inch diameter.

Uniformity of Strands

The next speaker asserted that the properties of the high-strength, stress relieved steel used in prestressing is more uniform than anything else used in this type of construction. Continuing, Lloyd E. Hill, sales engineer of John A. Roebling's Sons Corporation, Trenton, New Jersey, spoke about "Field Problems and Operations in Tensioning Strands for Pretensioning Concrete." Because of the uniform properties of this steel, Mr. Hill said, "The steel manufacturers' typical load elongation curve is the most accurate tool to use in arriving at specified initial tension in the steel. A reasonable tolerance should be allowed in the tensioning load since the ultimate carrying capacity of the member is not affected nor is its performance at working load."

The speaker said it is important that specifications and inspection practices should be made practical "to avoid undue restrictions on the fabricator." Mr. Hill also said all strands in one pour should be of the same strength. He said the use of deflected strands is increasing.

Early strength being important in the economics of prestressed concrete, the Conference visitors were attentive when a concrete specialist on the Monday afternoon program explained nine ways of attaining the desired result. The speaker was Paul Klieger, senior research engineer of the Portland Cement Association, Chicago. In introducing his subject, Mr. Klieger suggested that since the use of prestressed concrete is growing rapidly, continued growth is dependent to a large extent on its relative economy in comparison with other structural materials.

"Important factors in the economics of prestressed concrete," he went on, "are both the cost of producing early high-strength concrete and the resulting economies which can be effected by the early application of the prestress in either pretensioned or post-tensioned methods. In the pretensioned method, early application of prestress permits more efficient utilization of forms and stressing equipment. The earlier the concrete reaches the required strength, the earlier the prestress can be applied."

The speaker said his report would deal with the presently available means for producing early high-strength concrete. "The choice of a method for a particular situation," Mr. Klieger said, "will depend upon availability of specific materials, mixing equipment, compacting equipment, and the relative effectiveness of the method. Other important physical properties of the concrete also must be kept in mind when considering these means for attaining early high strength. He showed slides illustrating the influence on concrete strength of such factors as the water-cement ratio, method of compaction, moisture availability, mixing and curing temperature, and type of cement.

9 Ways to Early Strength

The nine means for obtaining quality concrete having high-early strength for prestressing, as suggested by Mr. Klieger, are:

(1) The use of low water-cement ratio, rich mixes of plastic consistency.

(2) The use of low water-cement ratio, rich, dry mixes placed by mechanical means of compaction such as vibration, to permit use of more aggregate per unit volume.

(3) The use of water curing during the early hours of hydration, either by ponding the surface or by the use of saturated aggregates. When lightweight aggregates are used, this technique affords little benefit, however.

(4) The use of high-early-strength portland cement.

(5) The use of saturated steam at atmospheric pressure at temperatures below the boiling point of water.

(6) The use of effective insulation to retain heat generated by cement hydration.

(7) Careful control of aggregate gradation, and the weighing, mixing, compacting and curing of concrete.

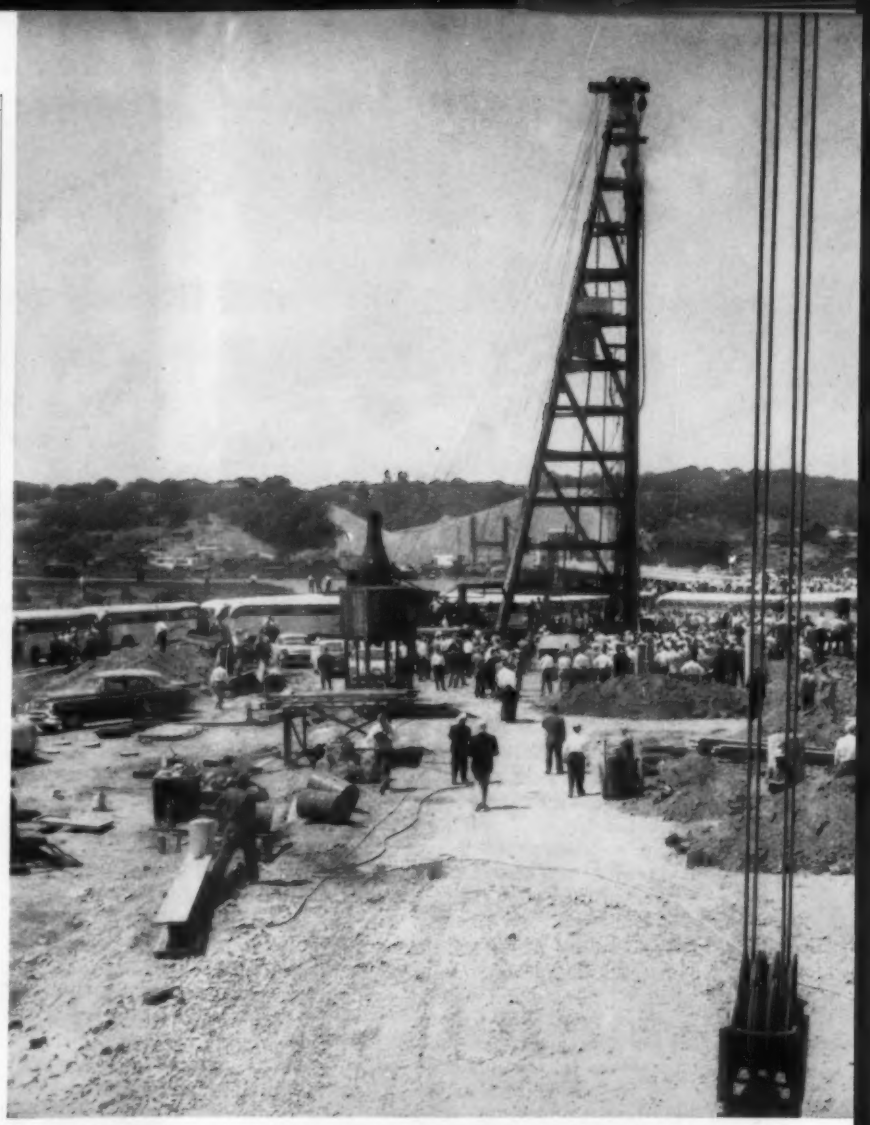
(8) The use of air-entrainment to assure adequate resistance to freezing and thawing and to retard the action of de-icing chemicals.

(9) Although the use of chemical means of accelerating strength gain (such as calcium chloride) might be considered, this method should be weighed against the possibility of steel corrosion in the presence of chloride ions.

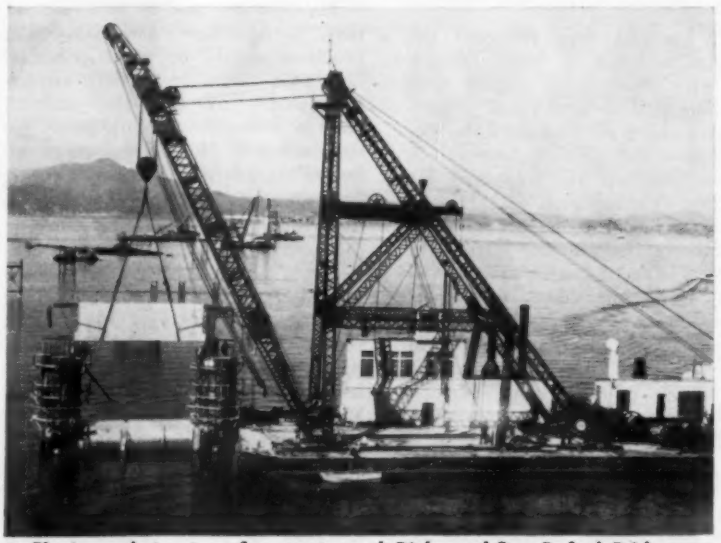
Affects on L. W. Aggregates

Truman R. Jones, Jr., associate research engineer, Texas Transportation Institute, Texas A & M College, College Station, Texas, closed the Monday afternoon program with a paper on "Properties of Lightweight Concrete Related to Prestressing." He used slides on modulus of elasticity, modulus of rupture and effect of a number of variables on creep and shrinkage versus time. "Lightweight aggregate," he said, "is affected by the same conditions as affect other aggregates in different degrees."

Factors affecting the physical properties of concrete which he deemed important to the design of prestressed structures were described. He also presented data for many laboratory tests carried out on concrete made with uncoated expanded shale and clay aggregate produced in Texas.



• On Wednesday's tour, conference visitors watched a 195-foot prestressed concrete pile being driven at site of Petaluma Creek Bridge.



• Placing substructure for prestressed Richmond-San Rafael Bridge.

Prestressed Concrete Bridges

Precast Prestressed Concrete Bridges, including the world's longest structure of this type, provided the theme for the morning program on Tuesday, July 30, the second day of the World Conference on Prestressed concrete. This gave the visitors a background of information and prepared them for the Wednesday field trip which included inspection of a number of prestressed bridge projects under way.

In opening the Tuesday morning session, Chairman G. S. Paxson, assistant state highway engineer, Salem, Oregon, referred to prestressed concrete as coming at an opportune time because of what he called "the most advanced highway program in history." Mr. Paxson is chairman of the bridge committee of the American Association of State Highway Officials.

Need Quality Standards

The first paper was by Arthur L. Elliott, bridge engineer for the California Division of Highways, Sacramento. His subject was "Construction Experience With Prestressed Concrete in California." Mr. Elliott referred to the ancient story from Arabian folklore, about the fisherman who imprisoned a powerful Jinni in a bottle. "Prestressing has imprisoned a powerful 'Jinni' in every prestressed beam," the speaker said. "Our problem is to keep him there. We are dealing with a live force."

Mr. Elliott said that most problems arise during construction. "Some contractors are afraid of prestressing," he said. "Like any specialized process it needs specialized experience. Trying to operate 'in the same old way' is fraught with danger." He declared that the manufacturers of prestressing elements have a responsibility to see that these elements are used properly. He also suggested that since many new subcontractors are coming into the field, some form of licensing should be adopted. "There are limits to competitive statements," he said.

The speaker referred to the fact that there are so many different systems of jacking, anchoring, grouting etc., that owners and contractors are often confused. Standards of concrete strength are another problem, he said. The state has found 4,500 pounds per square inch to be the best average strength for its purposes, he told his hearers. He also declared that "Until the prestressing industry as a whole becomes of age, and until it is more important to see that a proper prestressed job is obtained than to make sure that one particular system is used, we will continue to have standardization problems."

Mr. Elliott expressed the opinion that too little attention is paid to grouting and grouting equipment. "Without good grouting for protection of strands your job may come to naught," he said. He recommended high pressure pumps for grouting and said that this system of grouting is in its infancy. In concluding his paper, Mr. Elliott said that standards of workmanship and quality for prestressing operations are an urgent need. He said that California has built many prestressed bridges and will build many more. "We hope to warn others of the pitfalls. With knowledge and experience prestressed concrete is destined to go on and on."

In the next paper, entitled "Bureau of Public Roads Criteria for Prestressed Concrete Bridges," E. L. Erickson, chief bridge branch, U. S. Bureau of Public Roads, Washington, related the steps which led to the Bureau's active interest in prestressing. At the time the Walnut Lane Bridge in Philadelphia, first of its kind in the country, was built in 1951, Mr. Erickson said there were no codes or specifications for prestressed concrete. So the Bureau prepared its "Criteria for Prestressed Concrete Bridges" and distributed it among engineers in 1952. This resulted in the Bureau receiving many helpful comments and suggestions. The work was revised and published in its present form in 1955. Mr. Erickson said the "Criteria" is now the only guide to design that provides structures acceptable for federal aid projects. "The Bureau's interest," Mr. Erickson said, "was in producing something to protect against bad design assumptions and unscrupulous promotions." He said application of prestressing will reduce bridge costs. Mr. Erickson referred to a 300-foot span prestressed concrete bridge which the Bureau proposes to build as a test in Mt. Rainier Park.

Nisqually Bridge Described

David M. Goodall, senior highway bridge engineer of the Bureau of Public Roads, Region 8, Portland, Oregon, described this project in detail. He said the Bureau believes this bridge will have the third longest prestressed concrete span in the world. It is surpassed, he said, "only by a 320-foot center span of a prestressed concrete bridge now under construction in Australia, and a 350-foot span of a continuous bridge in Germany." The bridge described by Mr. Goodall is to be known as the Nisqually Glacier Bridge. It is designed to carry the Steven's Canyon Highway in the State of Washington, across the Nisqually River one-half mile from the face of Nisqually Glacier in Mt. Rainier Park.

Mr. Goodall explained that since the turn of the century three bridges have been lost in the same vicinity through floods or slides.

"Our proposed 300-foot main span with a 50-foot cantilever and a 90-foot cantilever will be almost twice as long as the longest prestressed concrete span yet constructed in the United States," Mr. Goodall said. Preliminary estimates, he said, indicated a saving of $125,000 in favor of prestressed concrete as compared with structural steel. He said that final engineer's estimates, based on exact quantities for the prestressed alternate, indicate the saving may be considerably more than this preliminary value.

"Needless to say we hope that the prestressed concrete alternate will be built," Mr. Goodall said. "If it is constructed, the use of this material in long spans should give a much needed boost to the use of prestressed concrete in bridge engineering. At the present time prestressed concrete is being used extensively in short span precast work where of course it has a significant place. The benefits of the use of prestressed concrete in long span cast-in-place work, either

statically determinate cantilever and suspended span layouts, or fully continuous layouts, has not been appreciated, in this country at least. If box girder construction is used which furnishes protection for unbonded cables without the bugaboo of excessive and difficult to determine friction losses, spans considerably greater than our proposed 300-foot span can be built at a decided saving over structural steel."

Construction and design problems which had to be solved in building the longest bridge in the world were related by W. F. Palmer, consulting engineer, president of Palmer & Baker of Mobile in the Tuesday morning program. He described the building of the 24-mile prestressed concrete bridge across Lake Ponchartrain in southern Louisiana. Four fixed towers were utilized in conducting the survey work, much of which was done by lights at night. The problems included determining the contour of the bridge with relation to the curvature of the earth, fixing its location by triangulation and allowing for 132 feet of expansion because of temperature variation between winter and summer. The bridge rests on 4,558 prestressed concrete piles driven to 80 feet below the water line. In some aspects it was more a manufacturing job than a construction project, Mr. Palmer said. The piles, pile caps and deck slabs which made up 98 per cent of the bridge were formed ashore in a six million dollar plant erected for the purpose. They were then assembled in place, an arrangement which permitted construction to be completed at the rate of 3,000 feet per week, a record-breaking rate for a project of this character. Mr. Palmer's talk was accompanied by an excellent colored motion picture, provided by the Ideal Cement Company, showing the project at various stages.

W. F. Palmer

224 Bridges in Illinois

The economy and speed of construction of prestressed concrete resulted in the use of this material for 224 bridges on the 193 mile Illinois Toll Highway. This was revealed in a paper by M. E. Bender, chief bridge engineer of Joseph K. Knoerle & Associates, Baltimore, Maryland, and Jack Janney, consulting engineer, Chicago. The paper was read by Mr. Bender as the closing feature on the Tuesday morning program.

"The departure from conventional methods in the design of structures for the Illinois Toll Highway was the result of efforts made toward meeting some of the particular problems associated with the project," Mr. Bender said. "The search for ways to reduce bridge costs and to improve construction schedules revealed the possibility that prestressed concrete as a design medium might offer the best solution toward those goals. Further investigation resulted in extensive use of prestressed concrete in the final design, the first case of mass production of such material being employed for work of similar extent and nature."

Before final approval for the use of prestressed concrete on the Toll Highway was secured, the Illinois Toll Road Commission authorized construction of a full scale prestressed concrete bridge of the type proposed, for test purposes. The structural members required for the test bridge were produced at the plant of Prestressed Structures, Incorporated, in Frankfort, Illinois, the nearest plant available at the time. Contract for the construction was awarded to the W. E. O'Neill Construction Company of Chicago. Work was started May 21, 1956, and completed July 8. The bridge was built at a site on the route of the toll road so that the structure will become a permanent part of the toll highway.

Tests of the structure were conducted for the Commission by Jack Janney, consulting engineer, who presented slides and a paper describing the tests and details of the structure.

In reference to the test bridge, Mr. Bender said that the information gained in observing the test bridge under construction and in going over the test data brought about the final acceptance of some points for use on the project. "The evidence was favorable", he said, "to the use of prestressed concrete members and preparations were made to include them in final design within certain span limits."

Mr. Bender's paper said that 448,000 linear feet of prestressed stringers were required for the entire highway project. More than 19 million linear feet of 7/16-inch prestressing strands will be needed and more than 90,000 cubic yards of concrete will be placed. He said a little over 50,000 linear feet of 36-inch diameter cylindrical prestressed concrete piles will be placed for piers in 90 of the bridge structures.

The speaker said that "The Criteria for Prestressed Concrete Bridges," as prepared by the Bureau of Public Roads, with a few minor exceptions, was used for general design purposes.

Mr. Bender showed that in general a considerable reduction in total cost was realized by the general use of prestressed concrete. He gave these bid prices for the manufacture and delivery of prestressed members:

	Per Linear Foot
36-inch girders	$11.20
48 x 24-inch girders ...	$13.30
48 x 28-inch girders ...	$15.25

● Deck slab, weighing 190 tons, is placed by floating rig during construction of the Lake Ponchartrain Bridge. Wayne F. Palmer, president of Palmer & Baker of Mobile, Alabama, detailed construction problems at the conference.

Erection prices, he said, averaged $2.70 per linear foot for the 36-inch girders and $3.20 for the 48-inch girders.

The speaker said that superstructure costs were reduced 23 per cent by the substitution of prestressed concrete stringers for steel members. Total figures resulted in unit costs of $13.10 per square foot for the prestressed concrete bridge and $16.50 per square foot for the steel structure, a difference of 21 per cent. About 45,000 tons of structural steel members were replaced by prestressed concrete at a saving of approximately $4,000,000 over estimates.

Manufacturing and Marketing

Topics of Luncheon Discussions

There was a capacity attendance at each of the two Manufacturers' Luncheons arranged by the Prestressed Concrete Institute. The first one at noon on Tuesday, July 30, included a panel discussion on "Techniques and Methods of Manufacturing Prestressed Concrete." Martin P. Korn, executive secretary of the Institute, was chairman. Members of the panel were: Arthur R. Anderson, Concrete Engineering Company, Tacoma, Washington; George W. Ford, of R.W. Wright & Son, Incorporated, Ft. Lauderdale, Florida; Arthur C. Bruce, Schell Industries, Ltd., Woodstock, Ontario, and Paul S. Gillan, Florida Prestressed Concrete Company, Incorporated, Tampa, Florida.

Mr. Ford described the modern prestressing facilities at his company's Dania and North Pompano plants. He said the plants are now using prestressed concrete for craneways rather than the traditional steel. He said transit mixers and 1-cubic-yard buckets handle the concrete for filling forms.

Mr. Bruce described the development of his company's pretensioning plant in Woodstock, Ontario. He said all concrete for prestressing operations is placed from the company's own ready-mix trucks.

"In Tacoma," Mr. Anderson said, "our big job is developing a market for prestressed concrete in a timber country." He said it was necessary to do a strong selling job on architects and engineers. Prestressed members for bridges, he said, are made in the plant and hauled to the bridge site. He described a three-story school for girls constructed of prestressed concrete. He discussed Swedish developments in prestressing and said he had built a pilot plant along Swedish lines.

Crowd Marketing Session

The Manufacturers' Luncheon on Thursday, August 1, on "Marketing of Prestressed Concrete Products," drew an overflow crowd. Philip E. Balcomb, Pottstown, Pennsylvania, manager, Concrete Products of America Division of American Marietta Company, presided.

Panel members were all manufacturers who have demonstrated their understanding of effective marketing procedure in the concrete field. They were: R.M. Dubois of the Freyssinet Company, Incorporated, New York; Morris S. Pynoos, Rockwin Prestressed Concrete Corporation, Norwalk, California; Robert Singer, of Ben C. Gerwick, Incorporated, San Francisco; Jack Streblow, Basalt Rock Company, Incorporated, Napa, California, and Peter J. Verna, Jr., Concrete Materials, Incorporated, Charlotte, North Carolina.

"Markets are developed through engineering," Mr. Dubois declared. He harked back to the 1940's and the time when there were only three bidders for the construction of Pier 57 in New York. He described some of the early engineering investigations of the possibilities of prestressed concrete by the Raymond Concrete Pile Company about 1948. "Now we see such great projects as the Lake Ponchartrain Bridge." He said that the success of all large projects rested to a large extent on preliminary engineering studies.

Mr. Pynoos asserted that planned publicity and demonstrations for architects and engineers are essential to marketing prestressed concrete products. He showed a motion picture of a demonstration before a crowd of 600 potential specifiers. He said loading tests are especially valuable.

Market Development a Must

Mr. Singer said that in spite of the "better mousetrap theory" the world has not yet beaten a path to the door of the prestressed concrete manufacturer. "We must do market development work," he said, "to bring about further acceptance and use of prestressed concrete in all fields where it can be used logically and economically. If we are to produce, we must have a market." Quoting a steel company executive, Mr. Singer emphasized the fact that "it is more important to own a market than to own a plant."

The speaker paid high tribute to the continuing research work of the Portland Cement Association and others. "We must realize that the industry is still in its infancy," he said. "There must be a unified growth. It is the responsibility of all to aid in achieving a national goal."

Mr. Singer urged attention to the following points: (1) Support the work of the Prestressed Concrete Institute; (2) Continue efforts toward standardization; (3) More closely integrated marketing programs nationally and locally; and (4) Development of new markets.

Mr. Streblow declared that advertising of prestressed concrete is an important tool. He said that carefully planned advertising would help round out a marketing program. Also, the selection of an advertising agency is important. He said his company had aimed its advertising at all segments of the construction industry. Now, the greater effort would be concentrated on designers, especially to offer them help in solving design problems.

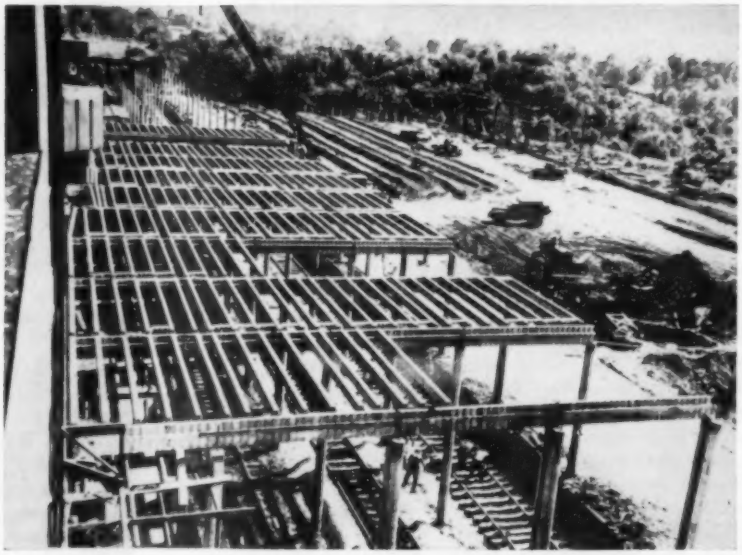
Mr. Verna pointed out that prestressing must be sold to architects and engineers. He said that every producer should have an experienced structural engineer in his organization; such a man would be able to assist designers and would know the capacities and limitations of the product. Prestressed Concrete producers could help themselves by giving speeches before civic clubs on this new material; preparing test demonstrations; giving feature stories to local newpapers; above all, talking prestressing; and making your product right.

A. M. Haas

● Right: cables are positioned for prestressing a shell roof structure in the Netherlands.

R. H. Bryan

● Right: prestressed multi-element units support joists of Crosley-Bendix plant at Nashville.



Prestressed Buildings in Europe and the U.S.

N. A. Owings, Fellow of the American Institute of Architects and partner in the architectural firm of Skidmore, Owings & Merrill, Chicago, presided at the Tuesday afternoon session on Prestressed Buildings.

Ross H. Bryan, consulting engineer, Nashville, Tennessee, the first speaker, described unusual construction features of a 70 million dollar plant being built for the Reynolds Metals Company at Listerhill, Alabama. Mr. Bryan said that a primary requirement for the project was a design which would be economical in time as well as money. Prestressed concrete floor and wall panels were used throughout the structures.

The project involved the construction of a rectifier building, approximately 40 x 800 feet in area, and 18 potline buildings, each approximately 70 x 420 feet, with inner connecting passageways. Prestressed concrete channels are used in both the floor and roof of the rectifier building. The structure is also enclosed with prestressed wall panels 45 feet high.

Floor construction in the potline buildings, Mr. Bryan said, is of prestressed, precast concrete sections set on precast columns and beams. The pots, which weigh approximately 100 tons, are supported by prestressed, precast beams. Each of the potline buildings is enclosed by 5-foot-high precast wall panels with steel wall and roof framing above. Brackets supporting the plant's electrical duct system are also of precast concrete bolted to precast concrete columns.

Mr. Bryan said the Reynolds plant is designed for a capacity of 200 mil-

lion pounds of aluminum per year, produced in 504 pots. The paper was illustrated with slide pictures.

Lift Slab Construction

A paper entitled "Our Experience With Prestressed Lift Slabs," by Charles Peterson, principal structural engineer of the California Division of Architecture, and A. H. Brownfield, supervising structural engineer of the same division, was read by Mr. Peterson. He said there has been a phenominal growth in the use of lift slab construction in California in the past seven years. "There can be no question but that the future of prestressed lift slab construction is assured," he said.

The speaker said that since 1954 the Division of Architecture has awarded contracts for nine lift slab projects involving 16 structures ranging from one to three stories high, all post-tensioned. He said that the Division now has on its drawing boards four prestressed lift slab projects for five buildings including a five-story office building for the Division of Highways. He said this is the highest to date. Mr. Peterson pointed out that the lift slab type of construction requires little forming or shoring lumber and generally takes less time to complete than conventional construction. He said lifting costs are being reduced. "The art of prestressing has endowed concrete with valuable characteristics. Its future is assured," he declared.

A paper on "Prestressed Shells and Precast Units" by Professor A. M. Haas of Delft University, Delft, Netherlands, was presented with slide pictures of some European structures.

"The application of prestress to shell structures offers the designer greater possibilities," Professor Haas said. "Larger spans may be used; and thus larger spaces, unobstructed by supporting columns, are available." Another advantage of prestressing on shell structures, he said, is that cracks in the thin-shell cover may be avoided because of the compressive forces which are always there. Professor Haas also emphasized what he called the favorable influence of prestressing in delaying cracking. "Fissuration due to shrinkage, unforeseen cracks due to creep or temperature changes," he said, "may be delayed or avoided by applying a few prestressing cables to a reinforced concrete shell roof."

A review of research on "Fire Resistance of Prestressed Concrete," was contained in a paper prepared by A. W. Hill, deputy technical director, Cement and Concrete Association, and L. A. Ashton, of the Fire Research Station, Boreham Woods, Herts, England. This paper was read by Philip H. T. Gooding, general secretary of the International Federation for Prestressing. The paper emphasized the necessity of considering possible fire exposure in designing a prestressed structure. The author said that fire test requirements in England were similar to those in the United States. The tests described were carried out in a laboratory near London and included beams and floor slabs. As a result of the tests, the paper said prestressed floor systems have been universally accepted by the Ministry of Works, Scientific Advisory Committee. Up to a four-hour resistance is required. Tests are being continued on cold drawn wire.

Prestressed members, the paper said, are likely to have a lower fire resistance than precast concrete members because they have a smaller section and hence less heat capacity. The paper pointed out that continuity has a marked effect on fire resistance.

According to the British test results, 700 to 850 degrees Fahrenheit is a critical temperature for cold drawn wire. More protection is afforded when wire is not near the surface. According to the test report, 1,100 degrees Fahrenheit is the critical temperature for mild steel. The British tests are continuing with 16 beams under observation. The results are to be reflected in the British code of practice.

Technical Films

A Tuesday night session was held for the showing of a number of technical films. Professor W. L. Lowry, Jr., head of the civil engineering department, Clemson A. and M. College, Clemson, South Carolina, presided at the night session.

George W. Ford, vice president of R. H. Wright & Son, Ft. Lauderdale, Florida, and general manager of that company's concrete department, showed a colored film of prestressing operations.

Edward Rice, chief engineer, Western Concrete Structures, Los Angeles, showed colored motion pictures on construction with prestressed concrete lift slabs.

Earl W. Brink, sales director, Prestressed Concrete, Incorporated, St. Paul, Minnesota, showed slides and motion pictures of steps in erecting a three-story manufacturing building with prestressed concrete.

Even after the strenuous all-day field trip Wednesday, the Conference meeting room was well-filled that night for the showing of six technical motion picture films and slides. C. C. Zollman, consulting engineer of Springfield, Pennsylvania presided at the session.

The first film was presented by J. R. D. Finfrock, president of Finfrock Industries, Incorporated, Orlando, Florida. This picture took viewers through the steps in the manufacture and handling of prestressed concrete masts, 76.4 feet long, for power transmission lines. These masts are cast six at a time.

Charles H. Goodman of Material Service Corporation, Chicago, delivered the commentary on pictures showing operation of 607-foot casting beds in which prestressed structural members with deflected strands are being made for bridges on the Illinois Toll Highway.

Rex Hartup of Food Machinery & Chemical Corporation, Lakeland, Florida, showed a film on "Steel Forms for Prestressed Concrete."

Robert H. Singer of Ben C. Gerwick, Incorporated, presented an interesting picture on "Deflected Strands for Heavy Pretensioned Members."

"Some Novel Applications of Prestressed Concrete," was the title of another film presented by Charles E. Reynolds of the Cement & Concrete Association, London, England. This featured the use of prestressing for a lightweight bridge carrying transmission wires and pipes.

A colored motion picture of the Waitaki River Bridge, New Zealand, was shown by Robert G. Norman, designing engineer of the Ministry of Works, of New Zealand.

● World Prestressed Conference . . .

Visitors Tour Projects and 2 Nearby Plants

Twenty-one buses were required to transport the conference delegates and visitors who partook of Wednesday's field trip to see nearby prestressing plants and construction projects incorporating prestressed sections. Still, scores more made the trip in private automobiles. A representative of the general arrangements committee accompanied each bus to assist the visitors in identifying points of interest throughout the all-day trip. En route to the large prestressing plant of Ben C. Gerwick, Incorporated, at Petaluma, stops were made to inspect prestressed construction in progress at the Richardson Bay Bridge and the Forbes Overhead on Highway 101. Both structures were designed by State of California engineers.

The Richardson Bay Bridge requires 270 "T" girders, each 80 feet long and weighing 40 tons. These structural members were fabricated in the plant of the Basalt Rock Company. The Freyssinet system of post-tensioning was used. Each girder contains 12 wires, .277 inches in diameter. Total prestress force per girder was 567,800 pounds.

In the Forbes Overhead structure 72 hollow-core deck units, 44 feet 11 inches long, were used. These pretensioned units, each weighing 19 tons, were made in the plant of Ben C. Gerwick, Incorporated. Fifty 7 wire strands of 3/8-inch diameter were used in each unit. Of these, 26 strands were deflected and 24 were straight.

Witness Tests on Piles

At the Gerwick plant the delegates witnessed loading and bending tests on four 16-inch hexagonal pretensioned piles. One of these piles was tested under a sustained load of 200 tons. The pile settled 3/8 inch under the 200-ton load and returned to a final settlement of 1/16 inch after the load was removed. Under a vertical load of 50 tons none of the four piles showed any movement. A bending pressure of 630,000 inch-pounds, applied to one pile produced no indication of distress.

The Gerwick plant began prestressing in 1954 with one prestressing bed 120 feet long x 5 feet wide. The plant now has a four-line 120-foot bed with an over-all width of 68 feet. The plant also has a 490-foot, four-line bed, 22 feet wide; a 340-foot long bed, 25 feet wide for heavy piles and bridge girders and a 410-foot bed, 23 feet wide.

The plant produces prestressed concrete piling in lengths up to 132 feet; bridge girders in both "I" and "T" sections up to 105-foot spans; flat slab deck units in 23 to 45-foot spans; channel units 26 to 55-feet long; building beams 27 to 55-feet long and double T sections in spans 20 to 55 feet. Most of these units are pretensioned.

Equipment includes two 60-ton gantry cranes to facilitate handling large structural members. All concrete used in the Gerwick plant is supplied by Petaluma Ready Mix Company from their plant nearby.

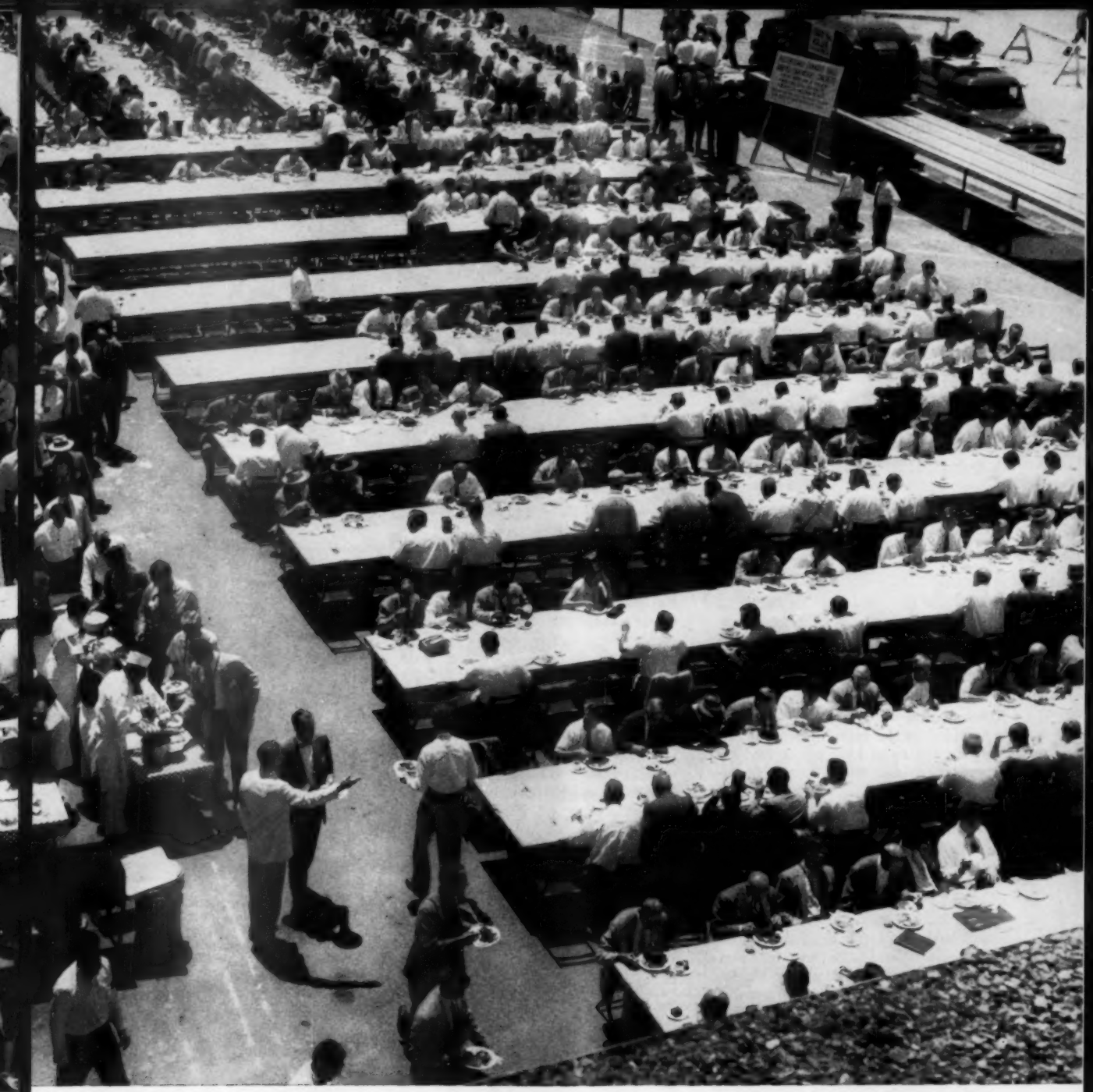
Driving a Bridge Pile

Next stop on the field trip was to witness driving of a large prestressed concrete pile at the site of the Petaluma Creek bridge. This was a composite concrete and steel pile 195 feet long, designed for a 200-ton load. Driving was done using a hammer with a 14,000 pound ram.

Girders and piles for the Petaluma Creek project are being manufactured in the Gerwick plant. The design requires 264 "T" girders that are 80 feet long, and weigh 32 tons. These, designed for pretensioning, contain 18, 7-wire straight stands and 18 deflected strands. All strands are 7/16 inch diameter.

The Conference "Cavalcade" reached the Basalt Rock Company plant at Napa, at noon where the more than 1,200 members of the party were luncheon guests of Basalt's structural concrete products division. The tasty menu was served at long rows of prestressed double-"T" slabs which proved perfect as outdoor dining tables.

The Basalt plant has two 400-foot double-"T" prestressing beds; two 180-foot double-"T" beds in addition to sample facilities for casting units of various types including wall slabs for dwellings. The plant also makes 50-foot channel slabs for bridge



decks with lightweight expanded shale aggregate. These units show a compressive strength of 5,000 pounds per square inch. Nearly all of Basalt's prestressing beds are located in a building, 65 feet x 1,000 feet, equipped with two 30-ton bridge cranes.

The facilities of the company's Structural Concrete Products Division are located close to the Basalt concrete block plant which was established in the year 1924.

On the return trip from the Basalt plant the visitors saw the Hercules Overpass on U.S., Highway 40. This project requires 136 "T" girders 79 feet long and weighing 38 tons. These were made in the Basalt plant. They are post-tensioned by the "Stresteel" system utilizing seven 1-1/8 inch diameter bars. Prestressing force is 550,000 pounds per girder.

● Prestress conference delegates on tour relax at lunch around prestressed double "T" slabs at Basalt Rock Company's Napa, California, plant. Afterward, the visitors toured Basalt Rock's prestressing facilities.

• World Prestressed Conference Delegates Discuss Earthquake Construction, ½-Mile-High Towers, and

1,000-Foot Bridge Spans

D. C. Vandepitte

F. Levi

S. Ban

F. Leonhardt

• Concrete television tower in Germany was designed by Dr. Leonhardt.

Thursday morning's theme of the Prestressed Concrete Conference on "Design and Construction in Various Countries," brought out a prediction of 1,000-foot spans of prestressed concrete for suspension bridges. Speakers told of rapid developments in prestressing in European countries. A Japanese engineer described earthquake resistant construction.

R. J. Ruble, research engineer, Association of American Railroads, presided at the morning session. The prediction as to long prestressed suspension bridge spans was made by Professor Daniel C. C. Vandepitte of the University of Ghent in Belgium. In his talk on "Prestressed Concrete Suspension Bridges," he declared that prestressed concrete suspension bridge spans 1,000 to 1,500 feet long are entirely feasible. He predicted that within five years the United States will be building spans of that length. Professor Vandepitte was for years assistant to the late Professor Magnel, a foremost authority on prestressing and a professor at the University of Ghent. On his death, Professor Vandepitte took over Professor Magnel's work, including a 1,650-foot-high concrete tower surmounted by a 660-foot steel communications mast. He now conducts classes in engineering mechanics at the University of Ghent.

Professor Vandepitte believes there is a close relationship between the continuous prestressed concrete beam and a self-anchored suspension bridge. Leading up to this statement, he said: "When spans are long, the cables of prestressed concrete beams must have large eccentricities. In many cases the requirement that the cables be placed throughout their length above the lower fiber of the beam, forces the designer to increase its depth. One may, however, frankly abandon this requirement and place the cable below the lower edge of the beam, at least in its central portion. By transforming the structure thus consitituted, one finally obtains a suspended concrete beam which is prestressed by means of the main cables."

Professor Vandepitte said that these ideas have been embodied in a relatively short prestressed concrete suspension bridge near Ghent and in another built in the same area. "Much longer spans are feasible technically and economically," Professor Vandepitte declared. "Spans of 1,000 feet and beyond, depending on a number of factors, can be contemplated."

Progress in Italy and Japan

Professor Franco Levi of Torino Institute of Technology, Torino, Italy, and Professor Shizuo Ban of Kyoto University, Kyoto, Japan, were among the speakers at the morning program.

Professor Levi spoke on "Recent Development of Prestressing in Italy." He showed slide pictures of a theater, an exhibition hall and a textile factory in which thin-shell, prestressed-concrete roofs have been used. Professor Levi said the widest use of prestressed concrete in Italy was in bridges, and the country now has 30 large plants engaged in producing structural prestressed concrete. The use of prestressed concrete, he said, outweighs the use of steel. Prestressing is now a flourishing industry, destined to become even greater.

Professor Ban presented a paper on "Rigid Building Frame of Prestressed Concrete in Active Earthquake Areas." He described Japanese methods of applying prestressing to improve the earthquake resistance of buildings. Professor Ban explained that the frequency of earthquakes in Japan presents special problems in designing prestressed concrete structures. He described a general design principle for a structure to be free from any cracks under vertical loads alone but which may safely crack under combined lateral loads. He also offered a new method for connecting prestressed girders to columns without causing column rotation. He showed slide pictures illustrating this method.

Favors Concentrated Tendons

Dr. Fritz Leonhardt, consulting engineer of Stuttgart, Germany, presented a paper entitled: "Further Progress in the Use of Concentrated Tendons for Large Spans of Prestressed Concrete Bridges." Dr. Leonhardt, who is consultant to the Preload Company, Incorporated, New York, declared the progress in prestressing in the last few years is amazing. He referred to concentrated tendons as an innovation in prestressing and described a five-span bridge with a middle span of 312 feet. He said concentrated tendons of 3400 tons will be used at the side of 20 centimeter webs but bonded to the webs.

Dr. Leonhardt also described a new type of anchorage for prestressing tendons in which horizontal layers of wire cable are fanned out at their ends. This, he said, allows enough space between wires so that concrete may be vibrated around them for firm anchorage. The concentrated tendons, he said, are formed of hard steel wires placed in a single casing and anchored so that all may be stressed at the same time.

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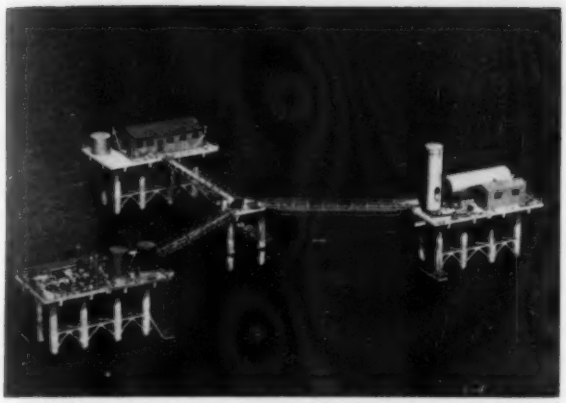
● Gerwick's plant cast and stressed the deck units for Union Oil Company's wharf at Oleum, California.



● Prestressed cylinders, fabricated by Raymond Concrete Pile Company, support this oil-drilling platform

Prestressed Concrete Used at Sea

The Prestressed Concrete Conference literally "covered the waterfront" during Thursday's afternoon session. Program theme was "Prestressed Pavements, Wharves, Piles, and Dams."

Henry M. Layne, consulting structural engineer of Los Angeles and president of the Structural Engineers' Association of California, was chairman of the session.

The first paper, by Frank M. Mellinger, director of the Ohio River Division Laboratories, U. S. Army Corps of Engineers, Cincinnati, Ohio, described studies of the possibilities of prestressed concrete for military airports, undertaken by the Corps of Engineers. He explained that among the problems of the Corps are the design and construction of pavements for military aircraft. He said his remarks would be limited to prestressed concrete.

When the Corps began studies of prestressed concrete, some years ago, Mr. Mellinger said the heaviest loads for which pavements were being designed at air force bases was 100,000 pounds. This loading required plain concrete pavement 15-to-20 inches thick and over-lays to strenghten existing pavement of 8-to-15 inches thick. Design load for heavy bombers has now been increased to 240,000 pounds, and this may soon be increased to 325,000 pounds. Prestressed concrete pavement now is being designed for heavy bomber aircraft with gross weights of more than 500,000 pounds.

Mr. Mellinger said the Corps at the moment is building a test track, to be completed in November, which will have dowelled expansion joints beneath a 4-inch-thick, prestressed-concrete overlay. One advantage of prestressed runways would be the elimination of troublesome joints, thus providing smoother surfaces for high-speed landings and takeoffs. Another advantage, he said, is economy of materials and the fact that less heavy equipment is needed.

Prestressed Piles

Ben C. Gerwick, Jr., newly-elected president of the Prestressed Concrete Institute and president of Ben C. Gerwick, Incorporated, presented a paper on "Concrete Pilings and Wharf Members" in conjunction with his company's chief engineer, W. J. Talbot.

Mr. Gerwick attributed the wide accepteance of prestressed concrete piles to their strength, durability, economy, and ease of handling. He said the prestressed concrete industry had developed to such a point in California that pretensioned concrete piles are available in almost any part of the state. His plant has shipped piles 400 miles by rail and 200 miles by ocean-going barges and has quoted on projects as far as 2,000 miles away. Piles as long as 200 feet can be handled, he said, and some long piles made in our plant have internal jet pipes. "No one type pile is best for all requirements," Mr. Gerwick said, "but prestressed pilings have proven to be superior to many kinds of installations. Their use is increasing."

Mr. Talbot followed Mr. Gerwick with comments and slide pictures on prestressed concrete deck units for wharves, which he said were the most practical units available for the purpose.

M. F. Fornerod, product research engineer for the Raymond Concrete Pile Company, New York, showed slide pictures of prestressed cylindrical concrete piles in lengths up to 200 feet and described the manufacture of these piles. He said the manufacturing methods were a combination of those used in making concrete pipe and those used in casting concrete piles. He mentioned that prestressed cylinder piles were used at many off-shore oil drilling platforms.

Mr. Fornerod stated that the cylinder type of pile was especially suitable for marine structures, also trestle bridge bents, and highway bridges. This type of pile has an exceptional capacity to function simultaneously as a foundation pile and as a structural member. This makes possible a new approach to many structural and foundation problems, he said.

A paper on "Prestressed Dams in Algeria," which was to have been delivered by Jean Muller, assistant chief engineer, Enterprises Campenon Bernard, Paris, France, was read by Eugene Smith of the Freyssinet Company, New York. Mr. Muller had prepared the paper and planned to be present but was unable to leave a large multiple arch dam on which he is working in Algeria. This dam utilizes prestressed concrete.

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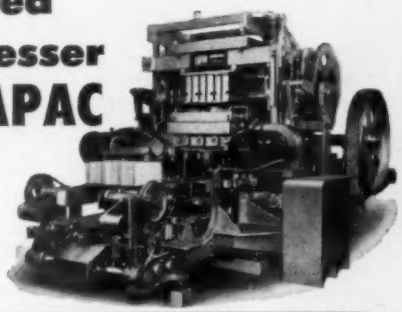

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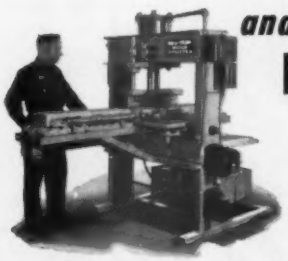

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• World Prestressed Conference

Centers Attention on Research Projects

Studies of calcium chloride's effect on stressing steel, determined by X-ray examination of strand specimens for pitting and corrosion by the salt, was one of the papers presented at Friday morning's session.

American Concrete Institute President Walter H. Price, who is chief of engineering, U.S. Bureau of Reclamation, Denver, Colorado, presided over this session, which included papers by research professors from three U.S. and two foreign universities.

Opening the day's session of papers, C. P. Siess, research professor of civil engineering and M. A. Sozen, research associate in civil engineering at the University of Illinois reviewed the University's prestressed concrete research projects completed, in progress, and planned. The report covered a six-year period beginning in 1950 when, according to Professor Siess, the Illinois Division of Highways approached the University on initiating a research program on prestressed concrete. Ensuing Investigations concerned behavior and ultimate strength of beams failing in flexure; behavior and ultimate strength of beams failing in diagonal tension or shear; time-dependent effects, including relaxation of prestressing wire, and changes in the camber or deflection of beams with lapse of time; the inter-relationships among various design criteria for beams at service and ultimate loads. Several hundred beams were tested including rectangular and "I" beams.

Strength and Fatigue

Carl E. Eckberg, Jr., chairman, structural concrete division at the Fritz Engineering Laboratory, Lehigh University, Bethlehem, Pennsylvania, gave details of applied and basic research on prestressed concrete to improve the design of bridge members. He said the purpose of the program was to evolve design criteria for prestressed concrete bridge members which would be based on actual tests in the laboratory, or field. Professor Eckberg described the current program of the University in investigating ultimate shear strength in prestressed members; ultimate strength of pretensioned members as limited by slip strands and ultimate strength of prestressed concrete as limited by fatigue in bending. In the latter field, static and dynamic tests were carried out on large members.

Effects of Chlorides

"Effects of Calcium Chloride on Prestressing Steel and X-Rays for Anchorage Length," was the title of a paper by Professor R. H. Evans, who holds the chair of civil engineering at the University of Leeds, England.

Professor R. H. Evans

Professor Evans pioneered in research on prestressed concrete in England; his work in this area had its beginning in 1938. He described tests on specimens, containing 2 per cent of calcium chloride, which had been steam cured at 180 degrees Fahrenheit. Corrosion of these steel strands was evident in varying amounts. One specimen in ten he said, pitted seriously. He asserted that in his opinion it is not advisable to use calcium chloride when members are to be cured with wet steam.

Professor Evans said his examination of a large number of prestressed concrete columns in which calcium chloride was used showed patches of rust and discoloration on many prestressing wires after intervals of from five weeks to 26 months of atmospheric curing. Referring to the use of X-Rays, he said X-Rays are a powerful tool for examining specimens, especially in checking the length of strands.

A paper on "Diagonal Tension in Prestressed Concrete Beams," by Professor Inge Lyse and C. J. Bernhardt, Institute of Technology, Trondheim, Norway, followed. Professor Lyse described studies of the general behavior of prestressed concrete members conducted at the Concrete Research Laboratory of the Institute. Professor Lyse expressed the opinion that, at present, practical application of prestressing is ahead of theoretical data. He gave the results of tests on 14 "I" beams and 5 rectangular members. All beams, he said, developed diagonal cracks and, at ultimate load, collapsed in the area of maximum shear force.

Research at Berkeley

The final paper of the Friday morning session was on "Flexural Strength of Prestressed Concrete at Transfer." The paper was the joint work of Professor A. C. Scordelis, Professor T. Y. Lin and Howard R. May, University of California at Berkeley. Research projects on prestressed concrete conducted at the University were illustrated with slides. One conclusion was that cracking and ultimate strength can be predicted.

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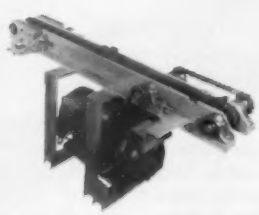

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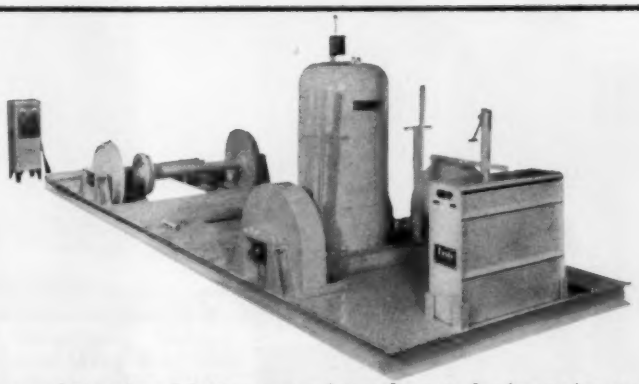

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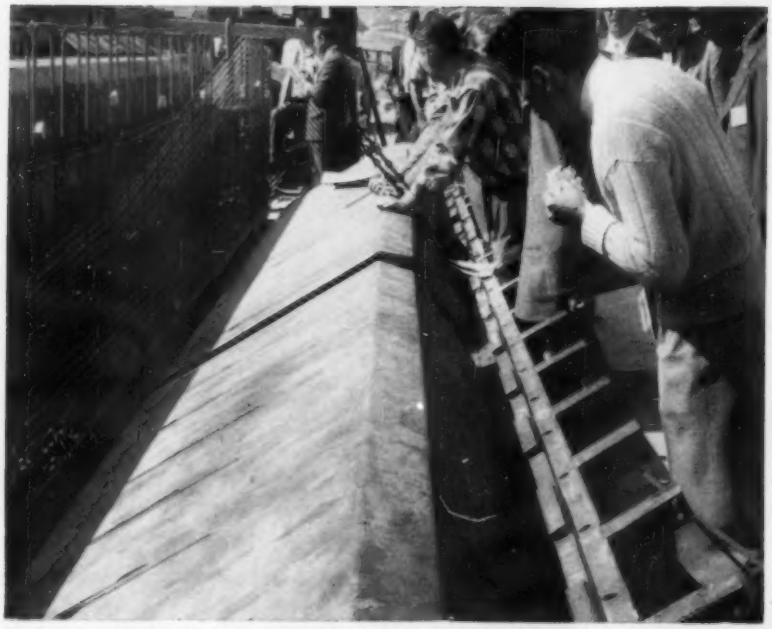
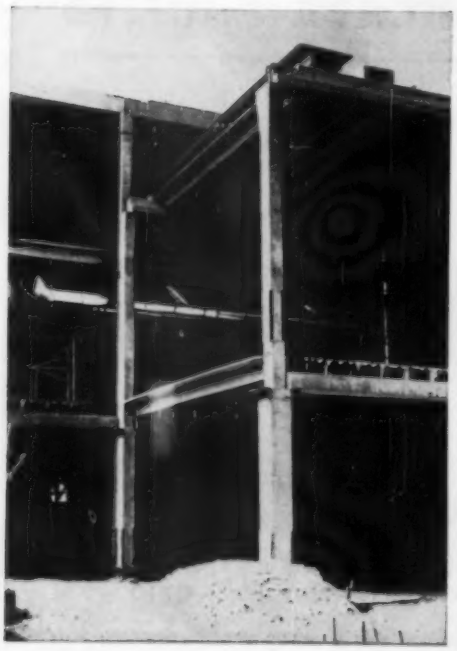


● Depressed strands in prestressing form, one side of which is tilted for viewing, are inspected by conference visitors touring Ben C. Gerwick's plant.



● Precast concrete columns uphold prestressed double "T" and girder units of the Allison-Erwin office-warehouse at Charlotte, North Carolina. Fabricator was Concrete Materials, Incorporated, of which PCI Secretary-Treasurer, Peter J. Verna, Jr., is president.

Speaking at the closing session of the World Conference on Prestressed Concrete, a Soviet engineer described an advanced system of automation using continuous reinforcement. He said this system has greatly improved the manufacture of prestressed concrete structures in the Soviet Union.

Over-all theme of the closing session was: "Manufacture of Prestressed Concrete in Various Countries." Harold A. Price, manager of the structural products division of Basalt Rock Company, Incorporated, Napa, California, was chairman.

"Pretensioning Plants and Production Methods in the United States of America," was the first subject presented. In its presentation, Peter J. Verna, Jr., president of Concrete Materials, Incorporated, Charlotte, North Carolina, recalled the Prestressed Conference held at Massachusetts Institute of Technology in 1951. He said then there was only one plant doing prestressing; in 1953, only six prestressing plants were in existence, but that year marked the development in the U.S. of a channel section by Ross Bryan and a double "T" by Harry Edwards. These sections had engineering appeal, he noted.

Now, there are approximately 200 prestressing plants in the United States, with about 100 more under construction, or in the planning stage.

Before it could be fully accepted, Mr. Verna said, "The prestressed concrete industry had to pass the three-way American construction test: Is it economical? Will it do a better job? Will it conserve critical materials?"

It was quickly recognized, Mr. Verna went on, that prestressing conserved steel. Further, construction was relatively simple with prestressed members. But it was also realized that manufacturing costs could be reduced. This, he said, resulted in the pretensioning plant, material handling devices, and mass production methods.

"The backbone of economy in prestressing," Mr. Verna said, "is in the development of efficient materials

(*Continued on page* 50)

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handling devices. Basically all plants are the same." Mr. Verna then described facilities which he felt the up-to-date prestressing plants should have. Reels of cable of the correct diameter should be available and accessible to the prestressing beds. He suggested that the average prestressing beds are 350 feet long, with some 600 feet or longer. Although there are many jacking devices, basically they are about the same. Forms, he said, should be efficient and easy to set up, requiring only one to two hours time. If forms require more time than this, he said, they may be wrong.

Curing hoods should be provided. Dry heat is not best for curing in his opinion. Products should be removed from casting beds as quickly as possible for economical operation.

Most prestressed production, Mr. Verna believes, comes from ready-mixed concrete. He feels a plant laboratory is an essential facility for control of quality, and that trucks and lifting equipment contribute much to successful plant operation.

E. W. H. Gifford, consulting engineer of Southampton, England, read a paper on "Sectional, Precast, Prestressed Concrete Beams," pointing to advantages in their use in England. Among these, he mentioned, is that "long, heavy beams may be sub-divided for transport and handling." He cited other advantages — easier construction of intricate details such as diaphragms and the fact that the placing of high quality concrete can be better controlled in small units. He said that there should be no more joints than absolute necessity dictates because the workmanship required for good jointing makes it a relatively slow operation. He said extreme care must be taken to be sure that the cable ducts at each joint register properly.

Automation in U.S.S.R.

The last paper of the program was presented by Professor V. V. Mikhailov of the Academy of Construction and Architecture, Moscow, Union of Soviet Socialist Republics. The paper was entitled, "Automation in Production of Prestressed Units, U.S.S.R." A motion picture and slides accompanied the presentation of the paper.

Professor Mikhailov said the automation method, developed in U.S.S.R. in 1948, utilizes a new type of reinforced framework with a continuous wire passing through the framework. This continuous wire, he said, constitutes the entire reinforcement and minimizes the use of non-stressed bars and steel. He said the method followed a new understanding of material in ordinary and in prestressed concrete. The speaker said the method represents practically automatic production, saves labor, standardizes quality. This process is being used widely in the Soviet Union for the mass production of prefabricated block buildings.

Closing The Sessions

Before Professor T. Y. Lin of the University of California began his summation of the technical sessions, Chairman Price reminded delegates that much of the credit for the outstanding success of the Conference was due to the untiring work of Professor Lin as Conference co-ordinator.

In the closing summary, Professor Lin said, "The greatest concern is not what will happen in fifty years but what will happen now! Prestressing is a step forward. No one engineer can solve all problems. It is a job for all."

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NEW LITERATURE

MATERIALS TESTING—Specialized ovens, water baths, and humidity chambers are illustrated and described in a bulletin issued by *Soiltest, Incorporated*, 4711 West North Avenue, Chicago 39, Illinois. The units are designed for use in the field or laboratory for testing concrete and other construction materials in accordance with ASTM and AASHO specifications.

HOT WEATHER CONCRETING—*Alpha Portland Cement Company*, 15 South Third Street, Easton, Pennsylvania, has published the third folder in a series on Craftsmanship in Concrete. This folder has tips on concreting in hot weather and how to avoid early stiffening, strength trouble, cracks, weak surfaces.

LIFT TRUCKS—Yale Materials Handling Division of *The Yale & Towne Manufacturing Company*, 11,000 Roosevelt Boulevard, Philadelphia 15, Pennsylvania, has published a 16-page brochure on its new G-3 series of 15,000 to 20,000-pound-capacity industrial lift trucks.

TRUCK CRANE—The Power Loader, which is installed on the truck frame immediately at the rear of the cab and operates within a full 360-degree area of the truck, is described in a new four-page folder published by Daybrook Hydraulic Division, *L. A. Young Spring & Wire Corporation*, Bowling Green, Ohio.

CONCRETE COLOR—A brochure describing the uses and application of Sonobrite, integral pigments for coloring concrete, mortar, and cement mixtures, has just been issued by the Building Products Division of *L. Sonneborn Sons, Incorporated*, 404 Fourth Avenue, New York 16, New York. Illustrated are the four shades, tile red, green, buff, and brown, made from tested metallic oxides.

MATERIALS HANDLING EQUIPMENT—The complete line of fork-lift trucks, straddle carriers, powered hand trucks and towing tractors produced by the Industrial Truck Division of *Clark Equipment Company*, Battle Creek, Michigan, is described in a 16-page, four-color catalog. Every machine is illustrated. Attachments for fork trucks are included.

INDUSTRIAL TRUCKS—Trucks and attachments for mechanical handling application are covered in a 12-page guide prepared by *Hyster Company*, 2902 Northeast Clackamas Street, Portland 8, Oregon. The book covers Hyster's line of basic truck models, including lift trucks, mobile crane, straddle truck carriers, industrial tractor, and platform truck.

TRUCK MIXER—A 12-page bulletin published by *Construction Machinery Company*, Waterloo, Iowa, explains and illustrates features of the Transcrete truck mixer. Diagrams show mixing action of the blades.

FRONT END LOADERS—Form No. 1033-5-57 published by *Tractomotive Corporation* illustrates and describes each of the five Tracto-Loader models in current production. Copies are available from the company at Deerfield, Illinois.

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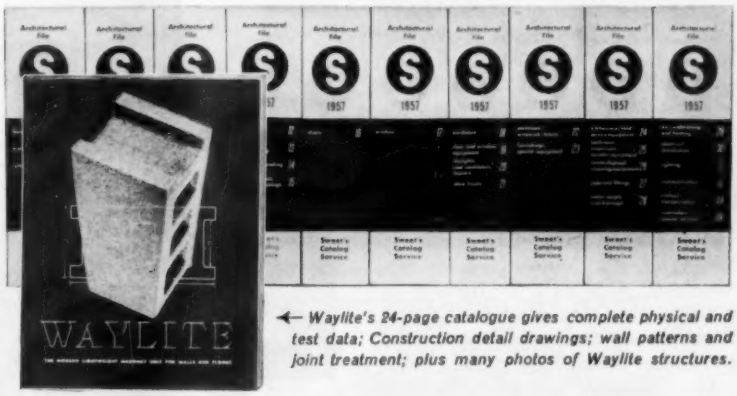

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R. R. Reese

Robert R. Reese is Galion Allsteel Body Company's new southeastern regional sales manager, according to an announcement by O. C. Henkel, vice-president of the company.

The duties of Mr. Reese in his territory will include supervision of the sale of Galion Allsteel dump bodies, hoists and hydraulic tail gates.

Ottawa Steel

Appointment of Ivan K. Knight as general sales manager of machinery manufactured by Ottawa Steel division of L. A. Young Spring & Wire Corporation, has been announced by Edwin L. Johnson, general manager.

Penn-Dixie Cement Corp.

Penn-Dixie Cement Corporation in New York City announces the appointment of Donald L. Hensley as general sales manager and E. Carl Matheson as assistant general sales manager, effective August 1.

Mr. Hensley became associated with the cement industry in 1939 and joined Penn-Dixie in a sales capacity in Boston in 1942. Later he

D. L. Hensley

E. C. Matheson

was made assistant general sales manager.

Mr. Matheson joined the company as assistant district sales manager in Boston. He was named district sales manager in Rochester in 1939 and subsequently served in the same capacity in Boston and New York.

Lamson Corporation

The appointment of Earl D. Hoyt as Cleveland regional manager was announced by Lamson Corporation, Syracuse, New York.

Mr. Hoyt's territory will include the states of Ohio, Indiana, Michigan, Kentucky, West Virginia and western Pennsylvania.

Four Wheel Drive Auto Co.,

Burg & O'Connor Motors, 16-18 North Main Street, Clintonville, Wisconsin, has been appointed sales, parts, and service dealer for Four Wheel Drive Auto Company transport carriers, ready-mix and commercial dump trucks in Shawano, Portage, Waupaca, and Waushara counties of Wisconsin.

Bucyrus-Erie Company

R. G. Allen

Robert G. Allen has been elected to a new vice-presidency created by Bucyrus-Erie Company, South Milwaukee, Wisconsin, in July. Before that he was president of the Pesco Products and Wooster divisions of the Borg-Warner Corporation, at Bedford and Wooster, Ohio.

Mr. Allen served two terms in Congress, from 1937-1941, on the foreign affairs commitee.

Form-Crete

The Florida Division of Food Machinery and Chemical Corporation announces the formation of a sales and manufacturing operation for their line of Form-Crete all steel prestressed concrete casting forms, in Riverside, California. These facilities will serve all states west of the Rocky Mountains.

Mr. E. G. M. Dykeman will be in charge of the Riverside operations and will be assisted by Mr. John Richard.

Worthington Corporation

W. C. Cheek

Several promotions in the marketing division of Worthington Corporation, Harrison, New Jersey, have been announced.

William C. Cheek is appointed midwest region sales manager. He has held the post of manager of the Chicago district office since 1945.

John H. Loomis, formerly manager of the corporation's St. Louis

J. H. Loomis

H. H. Wise

district office, replaces Mr. Cheek as manager of the Chicago district office.

Hollis H. Wise, resident general line salesman at Indianapolis since 1953, will take over managership of the St. Louis district office.

Pick Manufacturing Company

The Water Heating Division of Pick Manufacturing Company, West Bend, Wisconsin, announces the appointment of Mr. O. L. Daily as general sales manager as of July 1, 1957.

Joseph T. Ryerson & Son

The new steel service plant of Joseph T. Ryerson & Son, Incorporated, warehousing subsidiary of the Inland Steel Company, at Indianapolis, Indiana, is now open for business.

The announcement was made by Robert L. Larson who becomes general manager of the new facilities. Personnel assigned to Indianapolis with Mr. Larson include Fraser Martin, superintendent, and Thomas P. Powers, inside sales manager.

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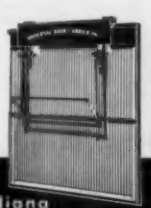
Most block producers are "good eggs"—but "hard boiled" equipment buyers. They're not easily taken in by titillating talk and perfumed prices. They're after *quality*. Equipment that will *make* 'em money and *save* 'em money by superior performance, dependability, and durability. That's why most "tough customers" are *our* customers.

Universal

KILN DOORS and DOOR CARRIERS
UNI-SEAL Superior Door Gasket and Cement
UNI-COAT Positive Anti-Rust Coating



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1117 Cornell Ave., Indianapolis 2, Indiana
"SPECIALISTS IN KILN CLOSURE EQUIPMENT—SINCE 1904"

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Deep Charcoal and Jet Blacks

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Patio Stone — **Split Block**

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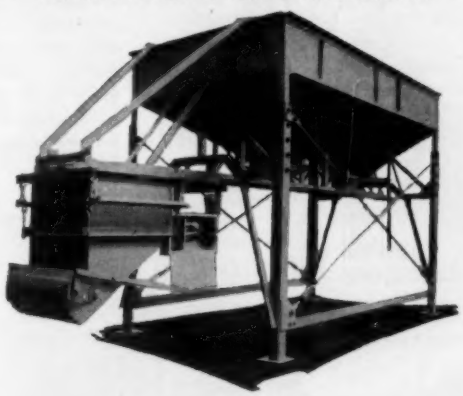
COST SAVING EQUIPMENT—FOR USE WITH 10S-11S-14S-16S MIXERS—AND AT CONCRETE PRODUCTS AND PIPE PLANTS



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Binanbatch can batch and discharge into one or two mixers. Hundreds of users of this equipment can tell of the cost saving advantages of the Binanbatch.

We offer batching bins for ready mix business at low investment

WRITE FOR COMPLETE DETAILS

WINSLOW SCALE COMPANY

P. O. BOX 1198 • TERRE HAUTE, IND.

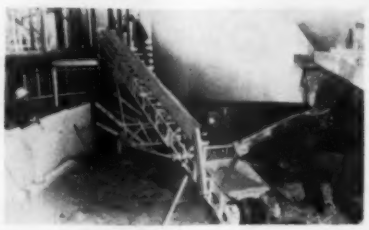
NEWS *from the Manufacturer*

METHODS
MATERIALS
EQUIPMENT
TOOLS

Faircrete Conveyor Now Used to Place Concrete

A growing trend to use trough belt conveyors in placing concrete has been noted by The Fairfield Engineering Company, manufacturer of the Faircrete Conveyor. According to this manufacturer, such use is appropriate when the construction is taking place in a confined area.

The conveyor is rolled as close as



possible to the forms, receives the ready mix from a truck mixer, and chutes the concrete directly into the forms. It moves up to 40 yards of concrete an hour.

More information on this method of placing concrete is available from the company at Marion, Ohio.

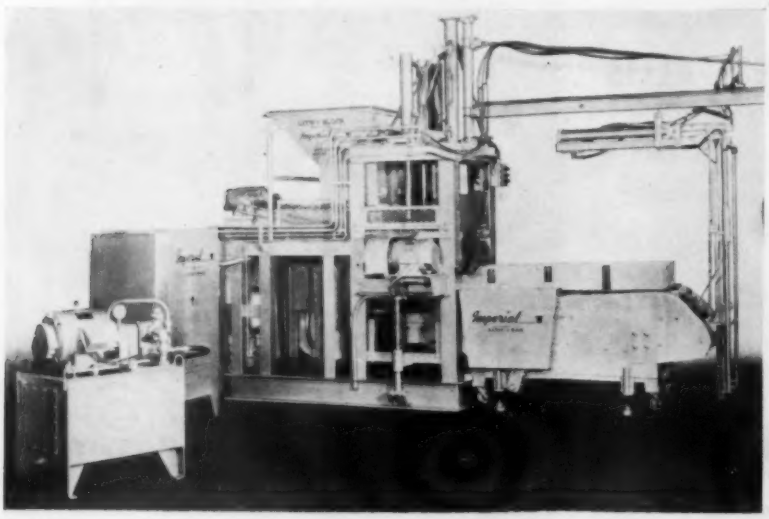
Lith-I-Bar Announces Its Imperial Block Machine

The Imperial line of automatic, hydraulically operated block machine, designed for producing both regular and special concrete block, is announced by Lith-I-Bar Company, Holland, Michigan.

Imperial models H-250 and H-350 produce two or three units per cycle, respectively, operating at four to six cycles per minute. Cycling sequences are controlled by a series of electrical limit switches. The machine can be stopped at any point in the cycle.

Front pallet feeder is electrically powered by a one-horsepower motor. It is controlled with a solenoid operated disc brake. The unit is fastened to the machine by two attaching bolts and can be disconnected from the machine.

A hydraulic control valve gives the operator control of the magnetic offbearer fork. Switches control the magnets, permitting the operator to start and stop the machine. Feed drawer, stripper and pallet supports are also operated hydraulically. High pressure braid hydraulic hose and steel tubing are used throughout the system. A control cabinet houses the main hydraulic valves and the electrical control panel, providing access for servicing.



Spring Tension Resets Blades of Masonry Cutter

Rice Pump & Machine Company of Belgium, Wisconsin, announce features of the new "Speedy" Masonry Cutter.

The two-wheeled unit is portable and has a full power design. Cranking mechanisms for blade clearance adjustment are eliminated. Blades reset themselves for the next cut by spring tension when the hydraulic valve is opened, or they may be brought together by stepping on the foot pedal.

The cutter is equipped with a 12-ton hydraulic ram. Power is applied to the upper blade, thereby exerting the cutting force downward and eliminating jump at time of cut. Height between the blades when fully opened is 10 inches. Information and specifications are available from the Rice Pump & Machine Company, Belgium, Wisconsin.

Vinyl Coating Developed for Elevator Buckets

A process for protecting elevator buckets with a coating of vinyl has been developed by The Bauer Brothers Company, Springfield, Ohio.

As materials don't adhere to vinyl, the coating helps make buckets self-cleaning. It also protects against rust and, according to the manufacturer, has high abrasion resistance.

Bauer now uses the vinyl coating on buckets it supplies to various industries and can also custom-coat buckets for other manufacturers. Information is available from the company.

you've a pat hand for PROFITS on any low slump concrete jobs, too—

A The only truck mixer with SWING-IN HOPPER for FASTER NO-FLASH BACK CHARGING
A HOPPER SWINGS OUT- FOR FAST UNOBSTRUCTED DISCHARGE of even 0" slump concrete
A LARGER DIAMETER DRUM HEAD - deeper blades for better mixing of stiff low-slump mixes
The one truck mixer with CMC FLOATING DRIVE which eliminates troubles of ordinary rigid drives A

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CONSTRUCTION MACHINERY CO., WATERLOO, IOWA

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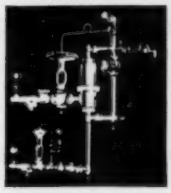
INSTANTANEOUS STEAM INJECTION WATER HEATER



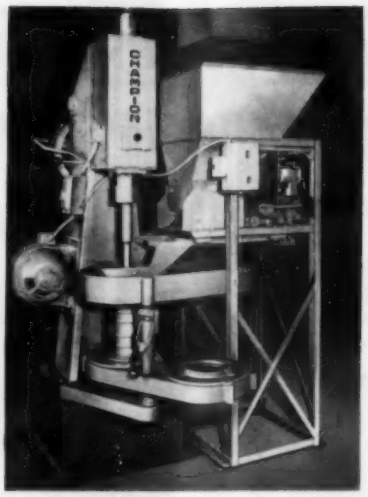
PICK MANUFACTURING CO. • WEST BEND, WIS.

One Operator Makes Drain Tile on Champion Machine

Addition of a new automatic feeder to the Champion concrete drain tile machine makes possible one-man manufacture of the units, according to the W. E. Dunn Manufacturing Company.

The Champion plant produces 300 concrete tile per hour in a range of sizes from three to 12 inches in diameter. Daily production for one operator averages from 1,500 to 2,000 units.

Mixed material is compacted in the mold by a packer head rotating at 500 revolutions per minute. It pauses just long enough for the operator to swing the turntable and place another casing in receiving position. Movements of the impeller, shuttle, and packer head are automatic, timed, and synchronized.

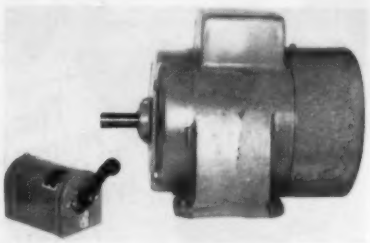


More information on the machine is available from W. E. Dunn Manufacturing Company, 306 West 24th Street, Holland, Michigan.

Clipper Saws Feature General Electric Motors

The Clipper Manufacturing Company, Suite 133, 2800 Warwick, Kansas City 8, Missouri, is featuring General Electric motors on their line of masonry saws. According to the manufacturer, they are capacitor start, capacitor run motors that require up to 20 per cent less amperage than other masonry saw motors.

The actual power developed is sev-



eral times greater than the nominal rating of the G.E. motors; up to six horsepower on the SuperMatic two-horsepower motor, and up to four horsepower on the 1½-horsepower Select-A-Notch motor. Both are provided with a centrifugal mechanism and switch.

These motors feature protection against moisture, heating, aging and abrasive type damage. Motor identification remains permanent.

Mix Water Introduced at Charging End of Mixer

A new design feature of the Model M series Blaw-Knox Trukmixers provides an auxiliary method for introducing tempering water. The new system permits the operator to intro-

duce mix water through the charging end of the mixer as well as through the drum head.

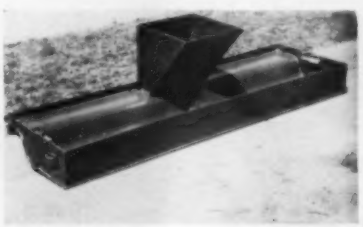
Principal advantage of this method is that it eliminates the tendency of concrete to build up on mixer blades at the drum opening, as the tempering and flush water is jetted against the blades.

Blaw-Knox furnishes an auto-stop meter on all sizes of the Model M which are equipped with both mix and flush water tanks. The meter measures all mix water entering the drum.

The flush water system is designed for field conversion from transit mix, where water is supplied at the batch plant, to job site mixing, where water is supplied from the mixer's water system. A standard Truckmixer feature is a drain cock arrangement for draining the system. Another system to prevent freezing of water in the pump and piping during cold weather operations is optional. More information is available from the company at 300 Sixth Avenue, Pittsburgh 22, Pennsylvania.

Steel Form Slides, Curb Is Poured Continuously

A "Curb Mule" that eliminates the need of curb face forms in pouring concrete for curbs and gutters has been introduced by Midwest Metal Stamping Company, Kellogg, Iowa. The sliding form makes possible continuous pouring of integral curb on slab or curb and gutter. Of



all-steel construction, the form is 86 inches long and 27 inches wide.

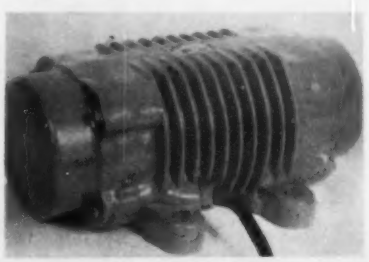
Adjusting bolts on the cross ribs permit changing the angle of the face sheet to conform with the variation that might occur where the crown of the slab meets the curb line. An angle running lengthwise at the back guides the form as it slides.

German Vibrator Speeds Removal of Pipe Forms

Hydrotile Machinery Company of Nashua, Iowa, introduces the "Elektror" German adjustable amplitude vibrator. It is available in several styles and is of low frequency, high impact type.

The "Elektror" is suitable for compacting either wet or semi-dry mixes, and in the case of reinforced concrete pipe, it is possible to remove the forms as soon as the pipe has been cast.

More information is available from Hydrotile Machinery Company, Nashua, Iowa.



EDMONT CASE NO. 616: Handling concrete block, a rubber coated canvas glove lasted 4 to 5 shifts. Edmont recommended a glove with triple-thick plastic palm coating (Monkey Grip No. 31) which wore 24 shifts and cut glove costs 72%.

Job-fitted glove cut costs 72%

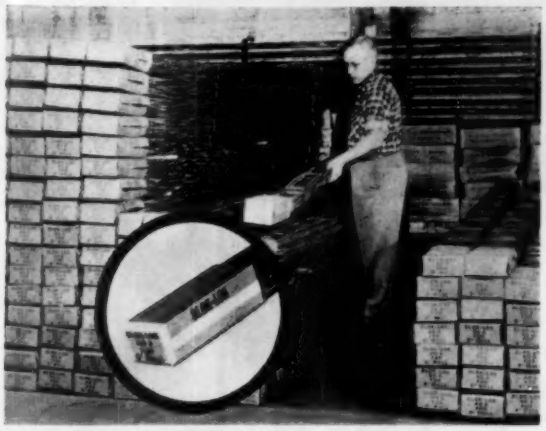
No. 31
Monkey Grip
triple-thick palm-coated knitwrist

Edmont
JOB-FITTED
GLOVES

Gloves wear longer and cost much less when they fit the job. Edmont recommended the No. 31 Monkey Grip, in case above, because it has proved to be unequalled for handling rough, abrasive building block. Its wing thumb pattern, with curved, pre-flexed fingers, assures comfort and reduces hand fatigue.

Free Test Offer to Listed Firms: We make over 50 types of job-fitted gloves. Tell us your operation, materials handled. We will recommend the Edmont glove that best fits your job, and send samples for job-testing.

Edmont Manufacturing Company
1206 Walnut Street, Coshocton, Ohio
In Canada write MSA, Toronto



BLOK-LOK (for Masonry Walls)

Flush-welded at cross ties for greater strength; controls shrinkage, settlement and temperature cracks.
Blok-Lok masonry wall reinforcement is marked and packaged for easy identification and handling; in bundles of 25 pieces, 10' or 12' lengths.

Please send me the following:

☐ 1957 Sweets Brochure (2c/Aa). ☐ Block and Blok-Lok Calculator

I am a ☐ Block Manufacturer ☐ Other

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NEW, WATER-REPELLENT BRUSH COAT SEALS PORES OF CONCRETE AND BEAUTIFIES IN ONLY ONE COAT!

- **For exterior or interior use on cinder blocks, light-weight aggregate and concrete blocks.**
- **Better than two or more coats of ordinary cement coatings.**
- **Fills all voids. No hair checking. No alligator checking. No powdering.**
- **No expensive equipment needed. Apply with ordinary scrub brush or short bristle paint brush.**
- **Easy mixing. No lumps. Quickly soluble.**
- **Easy brushing. Spreads like butter. Cures fast.**
- Comes in white and nine beautiful colors — cream, grey, green, brick red, light buff, sunny yellow, mint green, peach and coral pink.

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this new Erickson is
AR-TIC-U-LATED

MODEL P-7A 7,000 lbs.
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IT TURNS IN THE MIDDLE— TAKES THE CORNERS LIKE A BREEZE

United by a joint

Write for literature

Erickson has created a revolutionary new idea in platform trucks—it's ARTICULATED—with a joint or pivot between platform and drive wheels. Models P-7A and P-10A are the units for the new and unusual operations,—autoclaves, for instance—where you need utmost maneuverability with heavy duty capacity. With the ARTICULATED design, platform bed can be made up to 10 or 12 feet and still handle heavy, bulky loads with ease. These articulated models are in addition to the veteran Erickson P-5 and P-7 standard models, and built with the same rugged durability.

the WORKHORSE of LIFT TRUCKS

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POWER LIFT TRUCKS, Inc.
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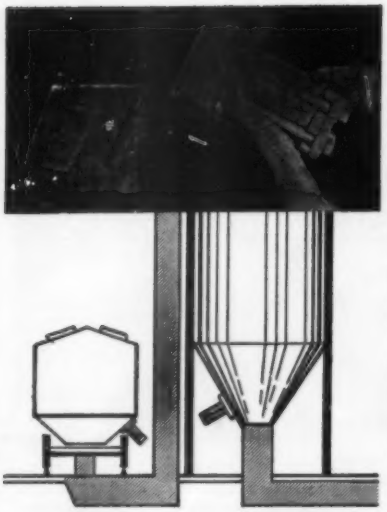


BETTER THAN TWINS

One Cleveland LSRR Vibrator will do two jobs for concrete plants. It can be used to unload cement from covered hopper cars, and then switched to trackside storage to guarantee a full flow from this bin.

The LSRR is also ideally suited to vibrating the forms of larger concrete products.

The HCLSRR is equipped with both a hydraulic C clamp and a male bracket for use on self clearing hopper cars for unloading sand and gravel.

Write for complete price list and technical data.

Bin Stuck Lately?

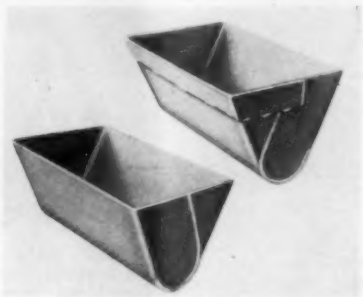
THE CLEVELAND VIBRATOR COMPANY

2708 Clinton Avenue • Cleveland 13, O.

Wincar Welders Produce New Elevator "J" Buckets

Welded-steel elevator buckets, manufactured by Wincar Welders, 3249 Cherry Avenue, Long Beach, California, are marketed under the tradename of "J" Buckets.

The name stems from the letter



"J" formed by the weld on each bucket end. The "J" Buckets are brake-formed from a single, shaped steel plate. Corners are round, smooth and free of welds and other irregularities. According to the manufacturer, the buckets discharge loads rapidly and completely.

"J" Buckets are available in three standard types and sizes. Although supplied with plain backs, they can be punched to customer requirements.

Matched Pair Provide the Finish on Concrete Floor

The Master Builders Company, 7016 Euclid Avenue, Cleveland 3, Ohio, division of American-Marietta Company, announces a two-package combination of products for obtaining built-in color for small concrete floor areas.

One package contains 35 pounds of Colorcron, a pre-mixed, ready-to-use material which, when applied to freshly placed concrete, produces a uniformly-colored, wear-resistant surface. The other package is a one-pound can of Colorwax, a two-purpose wax that cures new colored concrete floors and waxes the floor to protect the colored finish.

This size-combination of Colorcron and Colorwax packages is sufficient for approximately 70 square feet of floor. The products are matched in 10 available colors.

Besser Company Develops New Parts Control System

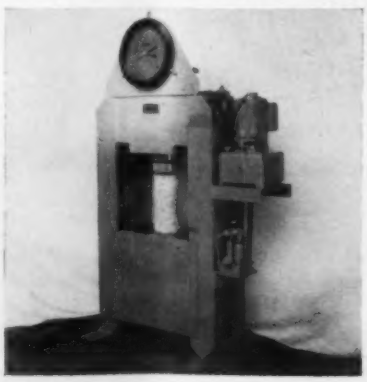
The Besser Company, Alpena, Michigan, has developed a method for controlling and storing necessary repair parts for block machines.

A visual record card for each repair part shows how much has been ordered, how much received, how much disbursed, past usage, how much on hand, how close this remainder is to the minimum at which stocks can be maintained within a margin of safety, and shows where the part is located in the storeroom. The system includes drawings of recommended storage racks, shelves, and bins.

Information may be obtained from Service Department, Besser Company, Alpena, Michigan, or from Besser sales and service representatives.

Forney Concrete Tester Applies 125-Ton Pressure

Forney Model FT-25 portable concrete tester applies controlled loads up to 8,850 pounds per square inch on standard 6 x 12-inch concrete cylinders. The tester features a Bourdon Tube Gage with an eight-inch diameter dial calibrated in pounds 0 to 250,000 with 500 pound sub-graduations.

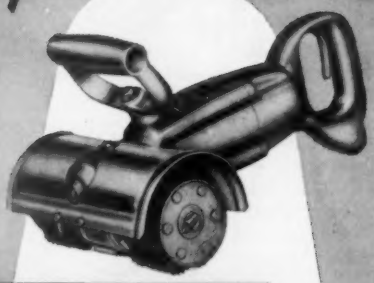


Available as standard accessory equipment are metric gages, and apparatus for testing 2 x 2-inch and 6 x 6-inch cubes, 8 x 8 x 16-inch blocks, and beams up to 40 inches long by either center or third point loading. A constant flow electric pump is also available.

More information is available from Forney's Incorporated, Tester Division, P. O. Box 310, New Castle, Pennsylvania.

Chip Away

SCALE
RUST
PAINT



AURAND
CLEANING TOOLS
ELECTRIC OR PNEUMATIC MODELS

Surfaces are cleaned quickly with AURAND on the job. Hardened steel cutters zip away stubborn accumulations from iron, steel, brick, concrete. Adjustable depth shoe protects surface . . . assures uniform cleaning. No special skill required. Renewable cutter heads. Two sizes in both electric and pneumatic models. Lightweight.

Write Dept. 15 for complete details

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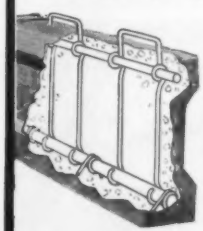
Fast, Precise Reinforcing for Pre-cast Concrete products



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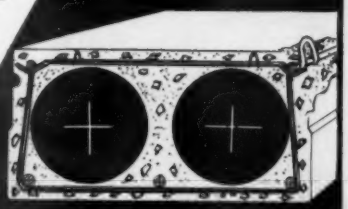
STIRRUPS and LEVELING LOOPS for prestressed concrete cored slabs.

- *Special sizes*
- *Prompt delivery*

Designed for ease of use in the reinforcing of concrete joists and other pre-cast concrete products.



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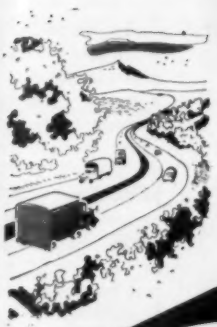
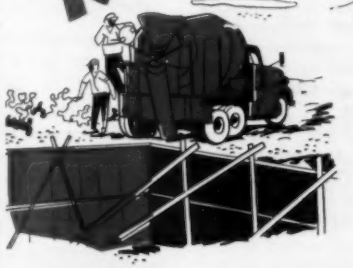
better concrete at lower cost with MARACON





a new name in the concrete industry

MARACONS are water-reducing admixtures for concrete. They promote more complete hydration of cement particles and permit a substantial reduction in the unit water content without loss of plasticity or consistency of the mix. This means —

A. Lower Concrete Costs: —

1. Attain higher strengths without increasing cement content of a mix.
2. Maintain slump and workability at low W/C ratios.
3. Permit economical redesign of conventional concrete mixes.

B. Better Quality Concrete: —

1. Minimize shrinkage in concrete before and after hardening, due to lower water content and more complete hydration of cement.
2. Achieve greater bond strength and higher durability factor.

The MARACONS also reduce water requirements in concrete mixes containing pozzolanic materials.

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MARATHON *Corporation*
CHEMICAL SALES DEPARTMENT
ROTHSCHILD • WISCONSIN

Dodson's Digest

How to combat the high cost of concreting

Had lunch with Dick Noble the other day. Dick is a highway contractor, and he was suffering from an occupational disease — rising costs.

"I just got back from a vacation in England, Dod," Dick reported. "And while I was there I took a firsthand look at their road-building program, to see if I could pick up any pointers on how to cut costs. You might say I went there as a 'roads scholar.'"

"Very funny," I said. "I see your trip to England hasn't spoiled your punmanship."

"But seriously, Dod," Dick continued. "My costs have really been rising lately. Especially labor costs."

"Calcium Chloride really helps you out there," I pointed out. "It increases the workability of your concrete, and gives you faster hardening. This makes for faster handling, and saves your men time. And cutting your time factor cuts your costs."

"Another problem that bothers me," Dick went on, "is the weather. We've got a pretty short season up here. But I don't suppose Calcium Chloride can do anything about that."

"Wrong!" I corrected him. "Calcium Chloride increases the strength of concrete in cold weather. This enables you to extend the season at both ends . . . permits all-year concreting in many areas."

"That's right, come to think of it," Dick agreed. "I remember the highway I saw in Alaska . . . and then there was a job up in Iceland. They wouldn't have had any season at all without Calcium Chloride."

"You get around quite a bit, don't you?" I said, impressed.

"I do a lot of traveling," Dick admitted. "In fact, you might say I'm the roamin'est Noble of them all."

— L. D. Dodson

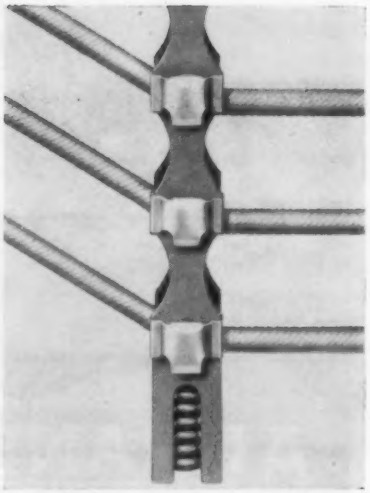
P.S. — Find out how Wyandotte Calcium Chloride can help you cut concreting costs. The facts are all in our folder, "How To Make Better Concrete Products and Ready-Mix." For your free copy, just drop me a line. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

Wyandotte CHEMICALS

WYANDOTTE

MICHIGAN ALKALI DIVISION
HEADQUARTERS FOR CALCIUM CHLORIDE

"Hold-Down" Restrains Cables in Prestress Unit



A "Hold-Down" for restraining wires and cables in prestressed beams and girders has been announced by Superior Concrete Accessories, Incorporated of Franklin Park, Illinois. These Hold-Downs restrain and hold the strands in the approximate path or position of a catenary curve. One to seven-strand Hold-Downs are available as required. Unit is held in position by a ¾-inch-high tensile coil bolt. Safe load on a seven-strand Hold-Down is approximately 14,700 pounds. Details are available from Superior Concrete Accessories Incorporated, 9301 King Street, Franklin Park, Illinois.

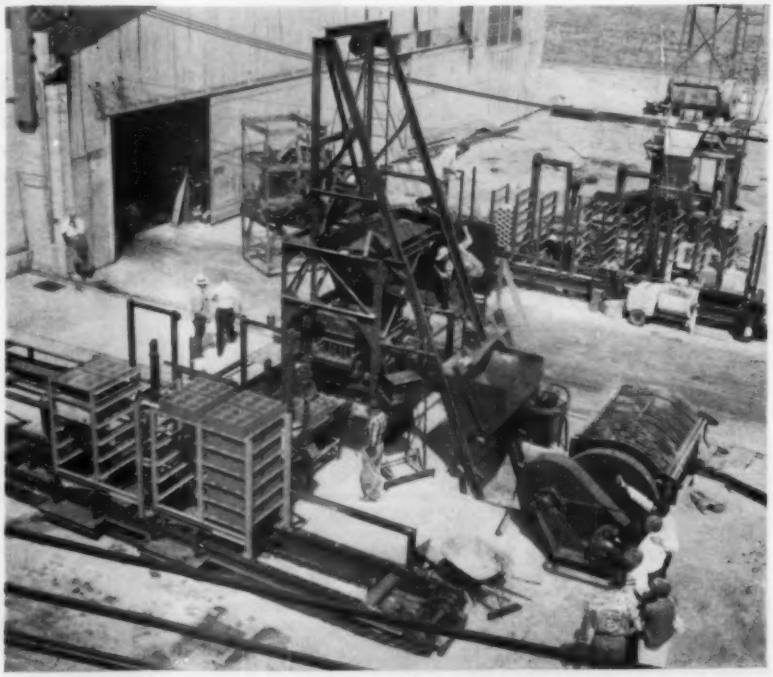
Green, Cured Units Are Handled Automatically

The new Columbia automatic loader takes the place of the conventional off-bearer while performing sequentially and automatically a number of other operations.

As an off-bearer, the machine takes the green block off the machine and places it in the proper slot in the rack. When the rack of green block is full the transverse conveyor moves a new rack into position for loading, at the same time moving the loaded rack to the discharge end.

In sequence the machine moves the incoming rack of cured block along the transverse conveyor from the charging end into position for unloading. The cured blocks on pallets are removed from the rack to the conveyor, where the block is automatically removed and transferred to the cuber, with the pallet continuing through the cleaner and oiler to the block machine.

The unit is tended by one lift truck operator and one cuber. Information is available from Columbia Machine, 107 South Grand, Vancouver, Washington.



Westinghouse Mixers Now Offer Truck Engine Drive

Truck engine drive for Westinghouse mixers is announced by Westinghouse Transit Mixer Division of LeTourneau-Westinghouse Company, P. O. Box 853, Indianapolis 6, Indiana.

Westinghouse drive, from engine to drum transmission, uses enclosed gears throughout. Two sets of bevel gears transfer power from engine to side of truck frame. Drive shaft, with universal joints, transmits power back to drum drive transmission through two sets of bevel gears. All gears are spiral bevel cut for full tooth contact and quietness and are of hardened alloy steel. Shafts run in ball bearings.

Drive is adaptable to a truck on which engine crankshaft has or can be fitted with take-off face, and if drive assembly from engine to offset drive can be run under or through hole in radiator. The unit includes mechanism for adjusting engine speed from either end of mixer.

Fairfield Co. Announces New Troughing Idlers

A new line of four- and five-inch troughing idlers in 18, 24, and 30-inch lengths, equipped with ball or roller bearings, has been announced by The Fairfield Engineering Company of Marion, Ohio.

The troughing idlers are mounted on self-cleaning frames. Bearings are fitted for pressure lubrication and have labyrinth seals against dirt. More information is available from the manufacturer.

Eveready Introduces Re-Designed BrikSawMatic

Eveready BrikSaw Company of Chicago announces the development of the new BrikSawMatic, featuring new cutting head design and recessed control crank.

The BrikSawMatic is powered by a two-horsepower, continuous duty, totally enclosed motor. Blades are protected from shock by a blade pressure equalizer.

More information is available from Eveready BrikSaw Company, Department 533, 1509 South Michigan Boulevard, Chicago 5, Illinois.

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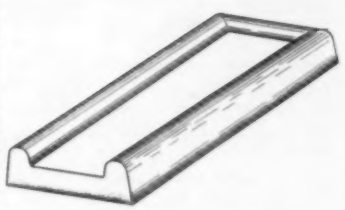

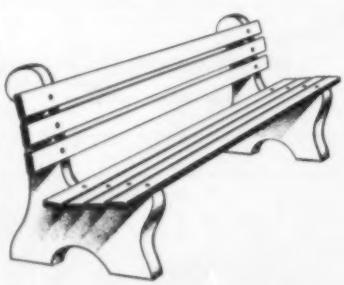

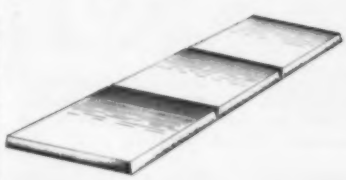

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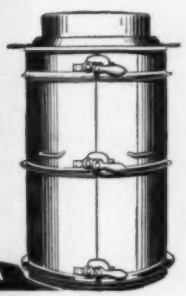

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THE EDITOR'S PAGE

DOUGLAS LEE

Seven-Year Growth

IN ITS continuing effort to publish news-worthy, timely, and interesting material—material selected with the intention of keeping its readers abreast of the latest developments in the concrete industries, CONCRETE asked Hubert C. Persons to cover on special assignment the World Conference on Prestressed Concrete. Mr. Persons, a recognized expert in the field, has covered every important prestressing meeting since the first conference at M.I.T. in 1951.

CONCRETE has devoted almost this entire issue to Mr. Persons' report of this conference; it warrants such full editorial treatment.

Unquestionably, prestressed concrete is an alive and growing portion of the concrete industry. Evidence of this is the 200 or so casting operations already producing various types of sections. Beyond this, there are believed to be approximately another 100 plants in varying stages of construction throughout the country.

But interest in prestressed concrete goes much further than these cold figures—witness the large, attentive crowds, including prominent block manufacturers and ready mixed concrete producers, as well as engineers and technicians, that gathered in San Francisco, the end of July, to listen to and participate in five days of sessions devoted solely to exchange of knowledge on the latest development within this field.

Such exchange is vital to the forward movement of an industry.

Two broad aspects of a prestressing operation were brought out indirectly at the conference. Plant facilities required to cast these sections are both costly and complex. Quite large amounts of capital are required to set up an operation capable of producing competitively. And, further, a considerable amount of technical know-how is involved in manufacturing.

Still, as emphasized by a number of the session speakers, the future of this portion of the concrete industry is immense. For the ready mixed producer, it offers an expanding market for his product.

One aspect of the conference that did surprise us was the almost complete lack of discussion of prestressed machine-made block assemblies. Block producers presently marketing these assemblies tell us that within certain limitations they compete with poured sections on a very favorable price basis and that they have developed good volume.

We hope this issue of CONCRETE will serve at least three functions: an immediate review for our readers who attended the conference, a digest for those who couldn't but wanted to attend, and a handy reference work for the future.

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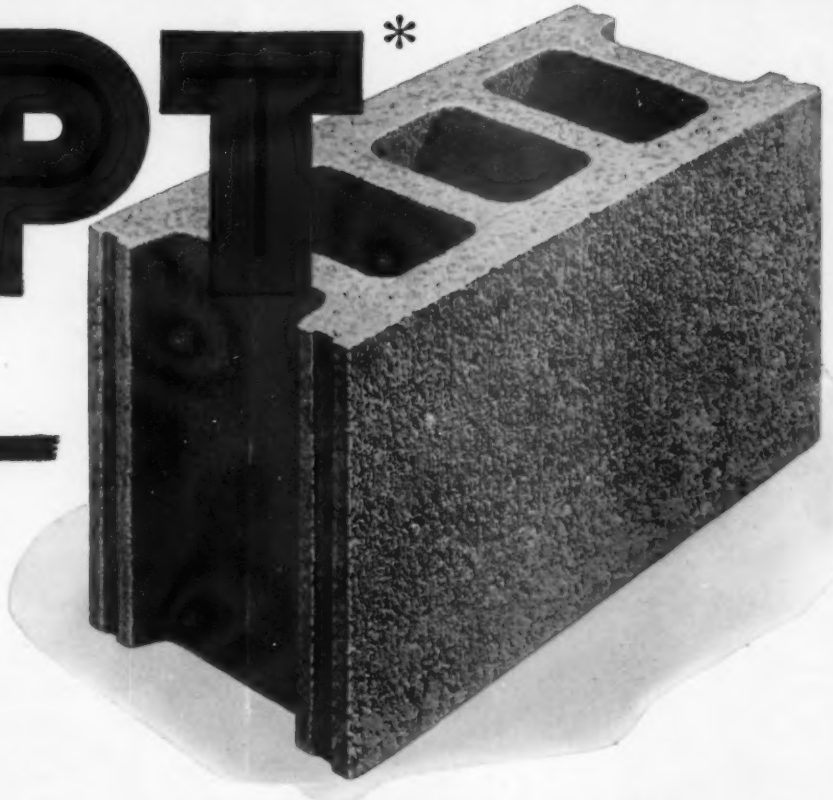
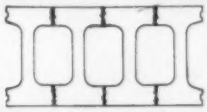
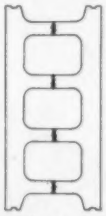


Evolution of the PERFECT BLOCK



1924—Besser introduced the Plain Pallet Stripper Tamper. Core plate marks were visible on the top face of each block.



1936 — Besser turned the block around, thereby moving the core plate marks to the center of the web. This was a great improvement.

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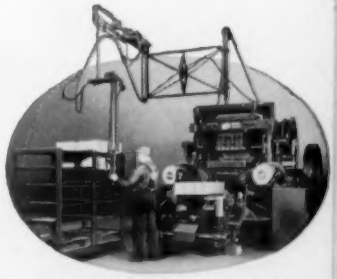

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